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A BABY PROFILE.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JANUARY 6, 1893. NO. 590.

A Baby Profile.

WHAT is the new-found marvel
The baby-eyes aver—
The little face uplifted,
The chubby hands astir?

Now, where may be the traveller
Who notes more keen than you,
Each item of the wonders
A new world brings to view?

O marvel among marvels,
The new amid the new;
You joy and wonder, ever—
WE joy and wonder, too.

Leila R. Ramsdell

OUR FRONTISPIECE.

THE Baby Profile which graces our pages this week is from a negative by Messrs. Pach Bros., of New York City, photographers who have made an enviable reputation for themselves, not only in portraiture like the specimen we have the pleasure to present to our readers this week, but also in groups of various kinds, landscapes, and, indeed, in every branch and department of photographic work.

The Baby Profile is from an instantaneously exposed negative, of course, and shows what can be done with this most difficult subject in obtaining an effective pose and pleasing lighting.

The reproduction has been made by Mr. Gutekunst, of Philadelphia, in his usual excellent manner, though, of course, the delicate softness of the original negative cannot be reproduced in printer's ink.

Miss Ramsdell's graceful lines above are particularly appropriate to this Baby Profile.

MODERN PRINTING METHODS.

PRINTING papers other than those coated with an albumen film become more and more popular. What threatens the supremacy of the old method most is chloride of silver emulsified with gelatine. Collodion and celloidine have been of late very extensively adopted by professional men, and with success. The excellent results obtained upon these media by the majority of our amateurs have pointed out their utility and good quality, in consequence of which we find many extensive establishments looking friendly upon the method, and small ateliers, especially those of country towns, have adopted it altogether. The reason is obviously to be looked for in the amount of labor saved, the possibility to print with at any time and without previous preparation, the ease of toning the prints, the absence of many defects and annoyances heir to albumen paper, and the generally fine results obtained.

Aristo paper and others quite similar, known by a variety of names, are virtually all alike in properties, and, excepting the emulsifying substance employed in the manufacturing of it, are the same—they all are ready to be printed upon at any time. A photographer having received orders to print from one negative a small edition within a short time, can do so at once without financial detriment. He need not wait till after sufficient printing orders have been given to make a day's printing and toning a profitable operation. He need not to rectify or to strengthen a bath, to sensitize or to fume as much paper as he in the presumably sunshiny day may be able to use up. All there is to do is to take a piece of paper from the package, place it under the negative, expose and finish. He can commence to print at once after entering his studio, and can print as long as daylight lasts. If silvering and fuming is required at least three hours of the generally adopted ten are lost to him.

Fixing and toning takes but a short time, and

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half a dozen cabinet prints may be made, finished, and delivered within one day, even though in the middle of December We do not intend to speak here of the merits or demerits of the combined toning and fixing bath, but it is evident aristo prints have been passed through this facile operation, and within two or three years have not shown the least tendency to fade or to lose in brilliancy. If, then, it is reasonably supposed prints thus treated will have at least a limited durability, the professional man must be excused if he adopts the method in cases of emergency.

Beginners are known to find all sorts of difficulties with the combined bath. Similar difficulties and others still more serious, they would encounter probably with any method, and we are justified to pass their opinions without much consideration.

As a general rule, the professional photographer tones and fixes his aristo prints the same as those made upon albumen paper. He does so to satisfy his own conscience, if not for other reasons, for the gelatine print handled and treated like its predecessor on albumen paper must, on account of the orthodox method employed, be permanent to all intents and purposes.

The greatest objection that can be raised against emulsion paper, is the same we have raised against ready-sensitized albumen paper, a decided want of durability. When fresh it is very fine to work with, when old an inferior medium to print upon. Chloride of silver emulsions intended to be spread upon paper are not washed and contain free nitrate of silver, which in contact with the organic substance present begin to act within a short time upon the silver haloid, within a limited time destroying the printing quality of the paper, its whiteness and purity. Some manufacturers of aristo paper announce to the public that their wares will hold good but a certain number of days, and attach to each package the date when the paper was made. Very honest and honorable. But had, for example, a consumer of much paper purchased a great deal of it, calculating from his ordinary run of business it would last him just so long, and for some reason or other his business had suffered and after the expiration of the ninety or one hundred days a good quantity of it spoiled were still on hand, what is he expected to do with it? Relegate it to the waste paper basket? Nothing else is left for him, but that is a very expensive way to accumulate waste.

Of all the emulsion papers that with collodion decomposes most rapidly, that with gelatine the least, but to counteract the effects of the former, and retain the good qualities of collodion paper chloride of silver emulsified with celloidine has been prepared and manufactured; it has advantages, and disadvantages too, and has for some reason or other not become popular among American photographers. But with all we can say in favor of gelatine paper, it will decompose in time as well as the others, however as gelatine presents so many advantages over any of the other media, an ingenious manufacturer, in trying to combine the good offered by albumen with the excellent properties of gelatine has made a new paper. Being furnished with a substratum similar to aristo paper, any kind of paper can be used, Rive's and Steinbach is, of course, the most reliable.

The paper which we have experimented with sufficiently to express an opinion on, will soon be on the market. It is coated with plain gelatine salted with chloride of ammonium the same as albumen paper, and is to be sensitized with nitrate of silver, 1 ounce in 10 ounces of water, and when dry fumed in the vapors of ammonia. The Europeans dispense with fuming, but make the silver solution much stronger. The paper prints rapidly and with all possible detail and brilliancy, from a feeble negative as well as emulsion paper provided it is exposed to different light.

Fixing and toning may be done by one operation and without previous washing. The combined bath described, page 447 THE PHOTOGRAPHIC TIMES, Vol. XXII. acts well. For separate toning and fixing the methods adopted for albumen paper may be employed. Gold neutralized with borax produces black tones, the bicarbonate and acetate purple or brown. There are no special precautions to be observed with this paper, excepting that after silvering, it must not be dried by heat, and to prevent after-toning, to wash copiously in running water. The tone does not go back in the fixing bath, and blisters are impossible to occur.

The paper has evidently a future, we recommend every practitioner to give it a trial, at least, to be convinced of its excellent qualities.

A HINT.

"He sent Miss Lordly a love-letter written on the back of one of his photographs, and she returned it."

"Why?"

"She intimated that she wasn't in favor of illustrated love-letters!"

THE GETTY CENTER
LIBRARY

EDITORIAL NOTES.

We note with regret that our esteemed friend, Prof. Arthur H. Elliott, Ph.D., F.C.S., for eight years the active editor of *Anthony's Photographic Bulletin*, has been compelled to resign the position which he has so ably and honorably filled during that period for reasons of health.

"Nature has warned me," he writes in his "Valedictory" in the December 24th issue, "that I have been taxing my eyes too severely and must give these precious organs a chance to recover from the effects of overwork. Over a year ago I had a similar warning, but the pleasure of being associated with such a glorious band of photographic workers kept me at my desk, and I hoped to be able to continue the work with the aid of a good lieutenant. For this purpose I called to my assistance Mr. F. P. Smith, a graduate of Columbia College, a good photographer and a practical chemist. But after struggling along many months, it soon became evident that evening work must cease; and since the greater part of my work upon the *Bulletin* was done under the lamp, as my days are filled with college duties, the end was forced upon me."

Mr. Smith now assumes the active editorship of the *Bulletin*, and we wish him all success.

Frequent inquiries have been made of late for the formula of a good varnish for photographic prints or engravings.

Here is one we can vouch for:

Water	320 parts
White gum lac	32 parts
Borax	8 parts
Carbonate of soda	2 parts
Glycerine	2 parts

Dissolve the borax and the carbonate of soda in 160 parts of warm water, then add the gum lac in small pieces, and stir until complete solution. Now filter, and add the glycerine and 160 parts of water. After a few days a deposit is formed, which is separated either by decanting or filtering, and the varnish is ready for use.

Apply with a short camel's-hair brush not too thickly, let dry spontaneously, the print in horizontal position.

Our esteemed friend and contributor, Herr Rath Ludwig Schrank, is rather severe in criticising Messrs. David & Scolik's "Notiz und Taschenbuch," in some instances being not at all justified. As, for example, the word "heliotype" is perfectly well understood by the older American photographers to be synonymous with "lichtdruck."

The greatest majority of photographers of this country, amateurs and professionals, use the apothecarie's ounce of 480 grains in preference of that of 437½ grains. "The American Annual of Photography" says distinctly:

"Unless specially directed otherwise the ounce in the case of solids is understood to be the Troy ounce of 8 drachms, or 480 grains, and in the case of liquids the ounce is understood to be the fluid ounce of 480 minims."

This system has been adopted in all The Scovill & Adams Company's publications.

AN AFRICAN EXPLORER'S PHOTOGRAPHIC OUTFIT.

The Camera is an indispensible part of an African explorer's outfit in these days. The Stanley expedition was fully equipped in this respect. Dr. Johnston, a missionary to whom we have referred in these columns, carried with him a complete Scovill outfit. And now Mr. R. L. Garner, author of the recent work on the speech of monkeys, and who has gone to the jungles of Africa to pursue his studies there, takes a camera as the most important part of his outfit. He described his equipment as follows, in a recent number of *The New Review*:

"I shall carry with me a good stock of photographic supplies, and two good cameras, with which I expect to secure some novel views. I shall endeavor to secure the photographs of various animals, wild in the forest, at a range of eight or ten feet. One simple method of doing so is to place my camera in such a way as to cover a certain field. Having set my shutter I shall require the animal to snap it himself, and take his own picture in my absence. This I shall do by attaching to a trigger a string of certain length, and to the string attach some seductive bait, so that any animal that takes the bait must pull the string, which will throw the trigger and take his picture. Of course I shall lose the string, bait, and trigger, but I shall know who got it. I shall carry among my supplies an armament which I presume will be equal to all demands upon it; as I am going on a mission of peace and not one of conquest, I shall not go escorted by an armed force. My carriers will be armed only with their native weapons, while I shall carry one magazine rifle, calibre 38, which has been presented me by General W. E. Webb, as a token of his faith."

COMPOSITE HELIOCHROMY.

Who Recognized the True Principle?

What Different "Authorities" Have Said.

LEON VIDAL.

(Who gives all the credit to Cros and Du Hauron, and denies that any new principle has been discovered.)

"We do not say that three negatives should be prepared, because it is possible that a larger number may be necessary." "Theoretical accuracy is far from being attained. The number of monochromes is insufficient..... We must use at least four *clichés*." "Must not for a moment think that three negatives.....are sufficient to produce every effect."[1]

"The negative belonging to the yellow monochrome.....ought to reproduce equally all the red and all the blue." "Negative corresponding to the red.....by means of an orthochromatic plate sensitive to yellow and used without a color screen..... The blue and yellow will produce a powerful effect."[2]

"The primary colors, yellow, blue and red,"[3]

DR. H. W. VOGEL.

(Who claims to have discovered the true principle in 1885, and to have practically solved the problem.)

"I propose.... that instead of a single sensitizer (as with Ducos), several be employed, and each by itself in a separate plate; a sensitizer for red, one for yellow, one for green, one for blue-green. One for blue is not necessary, inasmuch as bromide of silver is itself sensitive to blue."...."If the gradations in the green are not sufficient, it is easy to introduce a malachite, green or analogous optical sensitizer. Yes, it is recommended to introduce more optical sensitizers in the system; a greater number of gradations will thus be secured."[1]

"Later on Mr. Ives adopted the same ideas," etc.[2]

"A plate taken with cyanobromide of silver behind a red glass....is to be printed with cyanine."[3]

"That the optic sensitizer....form the printing color....or, if the sensitizer itself cannot be employed for the purpose, a color spectroscopically nearest possible to it be substituted."[4]

F. E. IVES.

(Who claims the discovery of the true principle, and denies that it was recognized by either Cros, Du Hauron, Vogel, or Vidal.)

"Pictures which do truly show the light and shade and all the colors of the object photographed can be produced by a process of this character, which is not based upon Brewster's theory of color, but upon that of Young, Helmholtz and Maxwell. . . . According to this theory there are . . . only three primary-color sensations. All color sensation is supposed to be due to the excitition of three kinds of nerve-fibrils in the eye. . . . After much experiment . . . I finally arrived at a new principle. . . . that of producing sets of heliochromic negatives by the action of light-rays as they affect the sets of nerve-fibrils in the eye," etc.[1]

"Making sets of negatives by the action of light-rays in proportion as they excite the primary-color sensation," etc.[2]

"Maxwell's diagram is a graphic representatiion of the result of careful photometric measurements of the effect of the spectrum rays upon the primary sensation." "The carrying out of my new principle, according to Maxwell's measurements, therefore, involves the production of one negative by the joint action of the red, orange, yellow and yellow-green rays, in definite proportions, to represent the red sensation; one by the joint action of the orange, yellow, green and green-blue rays, in definite proportions, to represent the green sensation, and one by the joint action of the blue-green, blue and violet rays, in definite proportions, to represent the blue sensation." "The plates and screens are correct when they will secure negatives of the spectrum, showing intensity curves substantially like the curves in Maxwell's diagram."

"A picture made by the joint action of red, orange, yellow and yellow-green

"We take this opportunity of protesting against the claims put forward by Cros and others, who have worked on similar lines, that they have succeeded even indirectly in solving the problem of photography in colors..... We, at any rate, have never seen a successful instance. We think, on the contrary, that a photographic selection of colors, however well it may be carried out, ought to be assisted by some retouching..... These corrections often consist only of a few blockings out on the negative or erasures on the printing surface."[4]

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1 *Anthony's Photographic Bulletin*, 1891, pp. 699, 728, 757.

2 *Anthony's Photo. Bulletin*, 1891, pp. 727-8.

N. B.—The negative belonging to the yellow monochrome should represent the fundamental blue-violet sensation, and it would be fatal to allow the red to act in producing it. The negative belonging to the "red" monochrome should represent the fundamental green sensation, and it would be fatal to allow the rays of the blue end of the spectrum above F½ G to act in producing it. F. E. I.

3 *Anthony's Photo. Bulletin*, 1891, p. 727.

N. B.—Even Cros and Du Hauron rejected this theory, although they never recognized essential features of the Young-Helmholtz theory. F. E. I.

4 *Anthony's Photo. Bulletin*, 1891. p. 699.

"The great problem of photography in natural colors is no longer a problem. It has been solved after my principle....You will see proofs of the process pretty soon."[5]

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1 *The Philadelphia Photographer*, Sept., 1885, p. 303.

N. B.—Here are six separate negatives definitely recommended, and apparently a suggestion that a still greater number might be better. The fact that all gradations of color can be reproduced with three negatives is distinctly discredited by this proposition, and was not admitted by Dr. Vogel until proved by me. Dr. Vogel should also have given Du Hauron credit for the idea of using different sensitizers in separate plates, since Du Hauron used chlorophyl in one plate and eosine in another several years before Dr. Vogel published his plan. F. E. I.

2 *Anthony's Photographic Bulletin*, 1891, p. 681.

[This is a slander. F. E. I.]

3 *Phila. Photographer*, 1885, p. 303,

4 *Phila. Photographer*, 1882. p. 303.

5 *Anthony's Photo. Bulletin*, 1892, p. 38.

N. B.—Some specimens since shown were made with three negatives instead of five or more, and the negative representing the red end of the spectrum is *not* printed with cyanine or its spectroscopical equivalent. No particulars are given, and there is no evidence that the results are obtained in accordance with any original idea of Dr. Vogel's. The printing colors appear to be those first proposed by me in 1888, although I have not had an opportunity to examine them spectroscopically. Cyanine or its spectroscopical equivalent would not answer for the print from a negative to represent the red sensation, because it transmits a great deal of red light and absorbs considerable green light. F. E. I.

rays, but chiefly by orange, instead of being projected by a similar mixture of spectrum rays, is projected by red rays only. Similarly, the picture made by orange, yellow, green and green-blue rays is projected by green rays only, and that made by blue-green, blue and violet rays, by blue-violet rays only. That is the true principle, yet nothing of the kind had ever been suggested."[4]

"In pigments, Prussian blue, magenta red and aniline yellow."[5]

... "The set of three photographs made as I have indicated...contain, in a permanent form, such a graphic record of the natural colors, that, in order to reproduce them to the eye, it is only necessary to superpose the three positive images, either upon a screen, or upon the retina of the eye—the one representing the red sensation with pure red light, the one presenting the green sensation with pure green light, and the one representing the blue-violet sensation with pure blue-violet light. The blending of the three images will excite exactly the same sensations as the light coming directly from the object itself... The synthesis can also be made with superposed transparent color prints."[6]

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1 *A New Principle in Heliochromy*, Phila., 1889.

2 *Journal of the Franklin Institute*, Jan. 1891, p. 13.

3 *Journal of the Franklin Institute*, Jan. 1891, pp. 14, 15.

4 *Journal of the Franklin Institute*, Jan. 1891, p. 16.

5 *Journal of the Franklin Institute*, Jan. 1889, p. 57.

N. B.—Prussian blue and magenta red are spectroscopically very different from any color sensitizers I have used in carrying out the process, and their selection is entirely independent of, and bears no relation to, means for obtaining the negatives. See *Journal of the Franklin Institute*, Jan., 1891, p. 17. Colors like cyanine and malachite green, the only two mentioned by Dr. Vogel in the article quoted cannot either of them be used successfully for this purpose. F. E. I.

6 *Journal of the Society of Arts*, London, 1892, p. 690.

THE QUESTION OF COLOR PHOTOGRAPHY AGAIN AND FOREVER.

[Written for the "American Annual of Photography and Photographic Times Almanac" for 1893, but received too late for publication in that volume.]

EVER since the interesting experiments of Mr. Lippmann, relative to the reproduction of colors by the interferential method, has become known, it has been published a thousand times, that the difficult problem, the solution of which seemed impossible, has been lucidly explained.

We must, of course, admit that the fact is remarkable, and that it may lead to such practical applications, even artistically, that it may be considered a real progress toward the desired end. So far, it is, perhaps, premature to cry over heads and winds, that all is done except improving the method for obtaining the compound colors. We must use the word perhaps, because it is dangerous to make any absolute assertion on such a delicate matter.

Having followed closely the experiments, we can humbly mention a few doubts as to the final success, but it may so happen that, thanks to this scientific point of departure, or by other analogous method, the colors, as produced by light, may be obtained.

It is undoubtedly a great deal to have perfectly determined the means of reproducing on a surface, in such a fixed manner, colors so brilliant as those of the solar spectra.

The experiments of reproducing the compound colors have been sufficiently successful to permit us to hope that with new improvements, we may get nearer to the truth.

The blending of the radiations behave in the same manner as the simple radiations, and if the results in that direction are not in every way satisfactory, it is because the operations become more and more delicate in a bewildering complication of the gradations multipled and intercrossing each other to the infinite.

It is this delicate operation that discourages our hopes of arriving at a satisfactory artistical result. The least variation in the sensitive medium, in the time of exposure necessary, the composition of the developer, or the thickness of the sensitized coating, is sufficient to modify the results.

Mr Lippmann demonstrated that a simple absorption of water vapors is sufficient to modify, by way of swelling of the vehicle, the distances of the interferential diaphragms, thus modifying thenature of the colors obtained. Evidently one can be protected from influences of this sort by means of a convenient varnish, but we mention this only to show how easily can be brought about a change in the dispositions or combinations of the luminous waves.

Without being pessimistic in our views, we cannot refrain from expressing the fear that in spite of all that has been done up to the present time, it may be a long time before the solution shall be complete and practical.

We will not say anything about the necessity, in the Lippmann method, of seeking a convenient angle of reflection, to see the polychromatic images, which is one of the greatest inconveniences, but it seems to us that the remedy may be found; and we would be happy if this was the only point of the problem not yet solved.

Allowing for the time which we will have to wait before the discovery of a direct and complete process of reproducing colors, we think it necessary to give some attention to the indirect ways of arriving, with the aid of photography, to the reconstruction of colors.

These colors, it is true, are only in the fugitive state, let us call them immaterial, but it is already a great deal to be able at will to produce the illusion of reality, with simpler means, better at the reach of every one than those which will always be required for the direct reproduction of colors. I have spoken often of the polychromatic projection with the aid of three diapositives of the same subject placed in certain desired conditions to separate as far as possible the primary radiations. The experiences reported since 1869 by Cros and by Ducos du Hauron have been proved with success by Mr. Ives, of Philadelphia. Mr. Scott has made them in England, and we also have shown them in Paris, and it is demonstrated that thanks to this method, pushed to the highest degree of perfection, a temporary reconstitution of colors may be obtained.

Cros and Ducos du Hauron had suggested the idea of making instruments adequate for the temporary reconstitution without using the projections, by the aid of mirrors or prisms placed so as to carry the superposition of the three images. This idea has taken a practical form since Mr. Ives came out with with his heliochromoscope—a box in the shape of a stereoscopic apparatus. The three diapositives being placed at the desired point, the eyes see them through an ocular, confounded in one, and in a polychromatic state, thus reproducing the true colors of the original.

The illusion of colors is thereby obtained in the same way as the relief is given by the stereoscope.

Of course this is somewhat a different thing from that of obtaining direct colors, but it helps to fill in the blank meanwhile, and besides it is very valuable to be able to view at will, the original

colors of a subject and it affords enjoyment when shown by projection.

The arts and sciences may draw some advantage from this means of the reconstitution of colors. Mr. Ives publishes that he obtains all in one the chromogram of three negatives. It will not be strange if apparatus such as heliochromoscopes, triple lanterns, will appear gradually with new improvements from the moment that the importance of this means of reconstituting colors will be appreciated. We are even of the impression that by this means we will arrive at the printing of polychromatic images, Lippmann's method, or other, much quicker than by acting directly on nature.

We study the questions in that sense.

To sum up: If the problem of the reproduction of colors remains yet to be solved as to scientific, artistic and industrial application it should be known that it is on a road which may lead to a solution, and on the other side, we possess from now a way truly wonderful of reconstituting the colors of an original, which permits us to state that photography will find its desired complement of reproducing not only the lines and form of objects, but also their true colors.

Leon Vidal.

SHELBURN W. BURNHAM.

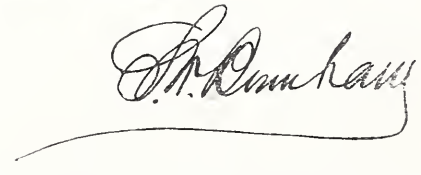
Mr. Kemp said: "Now, there's Burnham. Put him on a desert island, naked and without food. In a year he would have clothes and a house, a gold watch, a camera, a rifle, terrapin for dinner and a telescope. By the time they came to rake him off he would have made a list of new double stars as long as a court call. And all because of his Eye."

Mr. Kemp, the clerk of Judge Gresham's court, said this while prowling around the government building the other day, glancing through his big spectacles and trying to find something he had lost. He said it not in anger—for he likes Mr. Burnham and they together have tramped all over Cook County making photographs of unsuspecting countrymen and pretty scenes along the North Branch—but with the touch of querulousness which a near-sighted man feels over his own shortcoming when he considers it against the faculty some men have of seeing fly-specks at a mile distant. The Burnham he spoke about was sitting in the small room off the big room of the United States court clerk where W. H. Bradley sat for years. He was using his eyes for all they were worth this day looking through his correspondence. There were letters from a man in St. Petersburg asking him what the period of revolution of B 644 was; there was a letter from a photographers' monthly requesting the use of an instantaneous photograph of Judge Hoyne running for the elevator at dinner time; there was an invitation from the Sharp-shooters' Society of Milwaukee to attend the next schuetzenfest; there was a notice of the monthly meeting of stenographers of Chicago; there was a request from London for a paper on chemistry as an aid to spectrum analysis, and there was an order from the Attorney General's Office for the notice of appeal in the Lake front case. The eye with which Mr. Burnham saw all these things was small and bright and gray. It was a quick eye, too, and a shrewd one, having come from Vermont, where eyes become shrewd from looking for a decent place for their owners to live. Except for the eye one would not suspect this Mr. Burnham of being the man who found double stars where no other man could find them, who wrote papers on chemistry that were admired by learned men the world over, who took prizes for photography in a competition universal, who wrote shorthand faster than the fastest, who shot glass balls at fifty yards with a revolver, and who did such a lot of other extraordinary things that he is known to thousands of specialists in a dozen specialties as one of the best of them.

His California Experience.

Mr. Burnham has lately come back to Chicago. He left here a few years ago to work in Lick Observatory, but he could not get along with Holden and do justice to himself and he returned to take the late Mr. Bradley's place as clerk of the United States Court. It is a fine place, and it gives Mr. Burnham more time to work at his favorite avocation than the old grind of shorthand writing which he was at while European astronomical societies were ringing with his work. Just think of a fellow of the Royal British Astronomical Society, a member of the German





Astronomical Society and a master of arts of Yale making pot-hooks of an argument for the validity of a wax-paper patent. It was funny. Men used to come to town from abroad and permit themselves to be taken to the stock yards, which was then the main point of interest in Chicago.

"Where is Burnham to be found?" they asked, after they had seen the assassination of the hog.

"What Burnham?"

"Why, Burnham, the astronomer!" (In astonishment.)

"Who the blazes is he?"

Then the visitor would have to sit down and tell all about the double stars and marvel that a Chicagoan shouldn't know the thin, sallow man who was working beside Judge Gresham in the Circuit Court room; sometimes the stranger asked for Mr. Burnham, the chemist, or for Mr. Burnham the photographer, or Mr. Burnham the rifle shot. He was not likely to meet any one who knew him, although

any number of lawyers, lawyers' clerks and court reporters knew Mr. Burnham the stenographer, and respected him for his uncommon gift as a reporter.

NOT FOND OF TALKING SHOP.

Mr. Burnham won't talk about himself; but astronomers, though, will be glad to know that he keeps on adding names to an already marvelous list of double stars. He is going to print a revised copy of the list pretty soon and the manuscript of his catalogue, 1000 pages of writing, lies on his desk among the court calls. The stars in the catalogue are marked with a Greek Beta, which is Mr. Burnham's signature, and with the number given to them by him according to the date of their discovery. Every night he goes out to Evanston and pokes around in the heavens.

Mr. Burnham does not write pot-hooks now, but he still studies chemistry and he is always making wonderful shots with the rifle or the revolver. A friend of his who went tramping with him not long ago says he saw the astronomer shoot the head off a duck at 1000 yards with ease. It is a soft thing for him to hit a silver dollar in the air or shoot the spots out of playing cards with his revolver. At 500 feet he puts a bullet through a keyhole. His photographing work is marvelous and he is especially well known in the craft for his instantaneous photographs.

"It all comes from the eye," says Mr. Kemp, and that is what others say, too, for everything in which Mr. Burnham excels calls for extreme quickness and accuracy of sight.—*Chicago Post.*

Correspondence.

AMIDOL FOR PHOTO-MICROGRAPHS.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I have used as a developer, amidol, as per formula in this magazine, for developing photo-micrographs and like it better than any other that I have tried, my favorite being para heretofore. With amidol I can make a larger range of exposures without a failure, or a tedious process of development. In testing it I exposed in my micro work the same object, using the same lamp and plates, one was exposed one and a half minutes, one two minutes, another three minutes, another four minutes, and each one made a good printing dense negative. I cannot tell one from the other they are so nearly alike.

Respectfully yours,

Thos. J. Bray.

LANTERN SLIDES OF LIFE AND CHARACTER.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I am desirous of obtaining studies of life and character in all parts of the world, and, although I know it is a tall order, yet venture to utilize your columns (with your kind permission) to make known my yearning desire. First, however, I don't want something for nothing, but for every slide sent me an equivalent will be given. My offer is to give slide for slide. Any of your readers who may be in possession of hand-camera studies of street life, native characters, or scenes which will illustrate the life of that particular country, I should be glad to hear from. I will exchange any number (not exceeding eighteen) slides of English street life and character for a corresponding number from a foreign or colonial fellow-worker.

Although hand-camera shots would be preferred, as giving better renderings of life, yet I by no means wish the series thus limited. My object is to form a set of slides of an interesting and instructive nature, which will be ready for use by next season. I should be glad to hear from any one in this country as well who may possess suitable slides taken by them on a holiday trip abroad.

I am, yours, etc.,

Walter D. Welford.

47 Haygley Road, Birmingham.

KODAKS AT THE WORLD'S FAIR.

THERE has been an impression abroad that in the admission of hand cameras to the World's Fair grounds there was to be a discrimination in favor of the glass-plate camera as against the film camera. The following letter from official photographer Arnold to Mr. Geo. Eastman settles the question conclusively and shows that the Kodaker's $2 bill is as good as any other man's.

OFFICE OF D. H. BURNHAM,
DIRECTOR OF WORKS, WORLD'S COLUMBIAN EXPOSITION.

JACKSON PARK, CHICAGO, Ill., Dec. 16, 1892.

MR. GEO. EASTMAN, Rochester, N. Y.

Dear Sir: Your favor of 13th received.

In answer would say there will be no discrimination whatever; every man may use films or plates as he may select.

Very sincerely,

C. D. ARNOLD.

That the "Kodak fiend" will have a decided advantage over the "fiend" with a glass-plate camera, or even over the one using cut films is quite evident. We understand there are to be no dark-rooms on the grounds for the use of amateurs, and to carry more than a dozen glass plates with the necessary plate-holders about all day will be quite out of the question even with the most enthusiastic photographer. On the other hand the Kodaker with his roll of film weighing but a few ounces will be able to make 100 exposures for his new investment of $2.

Notes and News.

The Columbus Camera Club recently gave a very successful exhibition of photographs at the rooms of the Camera Club.

Broude Manufacturing Company had a fire in their frame department December 20th, in which sixteen thousand dollars ($16,000) worth of property was destroyed. The loss, however, was fully covered by insurance.

Edward D. Ritton, the oldest photographer in the United states, died at his home in Danbury, Friday, Dec. 9th, at the age of 69. He learned the Daguerreotype process when it was new, fifty years ago. He was a prominent Mason and Odd Fellow.—*Hartford Courant.*

The Lowell Camera Club held an exhibition of photographs made by amateur photographers, Monday evening December 19, in the Runnels Building. It was a stereopticon exhibition of slides furnished by members of the club, together with a large installment of the work of the Mystic Camera Club. There were nearly 300 people present and all seemed much pleased with the entertainment.

Credit Where Credit is Due.—The article on "The English Pharmacist and Photography," which appeared on page 627, of December 9th issue of THE PHOTOGRAPHIC TIMES, was reprinted from the *Pharmaceutical Era*, of Detroit. Credit would have been given in the article itself had the Editor been informed at the time the source from which it was taken. The article was sent in for publication without any comment.

Obituary.—Mrs. Susie Ryder Brennan, the only child of Mr. James F. Ryder, of Cleveland, recently died in that city.

Mrs. Brennan was an exceptionally lovely character, modest and intelligent, with an affectionate disposition, a keen sympathy and a broad charity that endeared her to all who knew her. She was a devoted daughter, wife, and mother, and the sympathy of the many friends who have known Mr. Ryder in his long and honorable career in Cleveland, will be extended to the bereaved family.

Doctors and Doctrines.—On Friday evening Dec. 9th, Prof. Reynold Wilcox, M.D., LL.D., delivered his fourth lecture on "Doctors and Doctrines," in the Phillips Presbyterian Church, Madison Avenue.

It was an eloquent, and at times, witty address, giving the relation of medicine to theology and law, showing the importance of medical men in the preservation of the public health, and their influence in the community; pointing out the difficulties encountered in developing the science of medicine, and showing that inasmuch as the life of a physician was markedly one of confidence, his deeds were not likely to receive popular applause.

The characteristics of a true physician were pointed out, and the dignity of the educated medical man of the present time insisted upon, and the doctrines of the profession briefly touched upon.

The lecture closed with an earnest and graceful declaration of the position of the thoroughly scientific physician in regard to the religious problems of the day.

A New Combined Visual and Photographic Objective.—In making the new twelve-inch objective for the Dudley Observatory, Mr. Brashear is carrying out a plan which was long ago developed mathematically by Professor Hastings, of Yale University. The crown glass lens is mounted in a cell fixed to the end of the telescope tube, and two flint glass lenses are provided, each in a separate cell, which serve to form with the crown lens either a visual or photographic combination. The flint lens is therefore on the outside. As in both cases the lenses are in contact, but must not be subjected to the least strain, very careful mechanical work is required in fitting the cells. Mr. Brashear has also added some very simple but ingenious appliances by which the exchange of cells can readily be made by one person.

This form is not so simple as the objective with single reversible crown lens, but it gives a more perfect correction for color and spherical aberration. It is well known to the practical optician, and is also demonstrable mathematically, that the reversible crown lens cannot meet both requirements in a perfectly satisfactory manner. In making the necessary compromise the greater sacrifice is generally thrown on the photographic arrangement, as the one in which errors are least noticeable. In the new form the definition of each combination is equal to that of a specially constructed objective.

If the glass makers could furnish glass with the requisite optical properties, both combinations could be made to have the same focal length. This may possibly be the next improvement to be looked for. The advantages of the new form over the visual objective with photographic corrector are obviously less loss of light by reflection and absorption, and greater lightness.—*Astro-Physical Notes.*

Photographic Societies.

FOR MEMBERS ONLY.

IN order to encourage our members to do new work, entirely the product of their own hands, and to stimulate them to trials of novel printing processes, it is proposed to hold a series of annual competions for members only; the first to be held in our rooms about March 15, 1893, and to be entitled "First Annual Members' Exhibition of Photographic Work."

Exposure, negative and print, in fact everything except mounting and framing, must be the sole work of the exhibitor. All pictures must be mounted, and, if possible, framed. The Committee prefer that all pictures be mounted and framed separately, in order to facilitate judging, which will be on individual prints and not by sets.

Names of exhibitors will not be allowed on pictures or frames, on which nothing should be displayed but the number or title. Prizes will be awarded at the discretion of the judges, but no awards will be made unless the work comes up to the required standard, which will be high. The Committee reserve the right to reject any picture, or series of pictures, at their discretion.

The judges will be chosen outside of the Society, but they will be required to judge not only for artistic qualities, but also for photographic technical excellence.

Prints which have taken prizes in other exhibitions will be barred from competition but may be exhibited; the idea being to promote the production of new work.

There will be five classes in the competition, as follows:

Class A.—Landscape and Marines.

Class B.—Figure Subjects, including Portraiture.

Class C.—Architecture, including Interiors.

Class D.—Hand-Camera Work.

Class E.—Transparencies, including Lantern Slides in sets of six.

There will be an entrance fee of fifty cents charged for each class. Any competitor may enter in any or every class. Entry forms and particulars may be obtained by application to any member of the Exhibition Committee at the rooms.

The Exhibition will be opened at the rooms of the Society, No. 113 West 38th Street, on March 15, 1893. Entries will close February 23d.

All pictures for exhibition must be delivered at the rooms, charges prepaid, before the first day of March.

Respectfully,

ALFRED STIEGLITZ,
C. C. ROUMAGE,
T. J. BURTON,
H. T. DUFFIELD,
WM. M. MURRAY.

Committee on Members' Exhibition of Photographic Work.

The Editorial Table.

Old Friends and New Faces. Photogravures of Children from Original Photographs by Mrs. N. Gray Bartlett. Boston: Joseph Knight Company.

Photography is playing a more important part every year in the illustration of fine books and periodicals, and photographic processes are coming to be known as a most appropriate method for illustrating holiday books.

In "Old Friends with New Faces" we have a holiday book which is not only illustrated by photographic methods, but the pictures are one and all from photographic negatives, even including the title page; and the entire production is an adequate representation of what photography can do in skilful hands to make a fine art work.

Mrs. Bartlett has long been known as a prominent amateur photographer. The present work shows that beside being a skilful operator she is also a trained artist.

The pictures in this work are ten in number, and are all from child life. They illustrate Mother Goose Rhymes in the most satisfactory manner, the subjects being carefully chosen, and the little models themselves being most appropriate for the subjects. The photogravures are printed on fine Japanese paper, tipped on the pages by the corners. Even to photographers the work will be a revelation, and to the general public it will possess a marvellous charm. Price, in a box, $2.00.

Song of the Brook. By Alfred Tennyson. Boston: Joseph Knight Company.

This volume, like the foregoing, is illustrated by photographic processes (photogravure), though unlike the others, the subjects are not from nature, but are the work of artists' hands.

It is a dainty book, bound in white vellum cloth, with gilt top, and printed on heavy paper on one side of the page only. The illustrations are sixteen in number, including an excellent frontispiece portrait of the late Lord Tennyson.

This charming little gift book, especially appropriate as it is for photographers, is sold in a box for $2.00.

Thanatopsis and a Forest Hymn. By William Cullen Bryant. Boston: Joseph Knight Company.

Bryant's earliest, remarkable, and in the minds of many people, his most remarkable poem is here presented in the most satisfactory manner possible.

The book contains some of the features which appear in both of the preceding volumes. It is illustrated by the highest grade of photogravure process (copper-plate), partly from photographic negatives direct from nature, and partly from illustrations by artists. As a whole, the photographs from nature are the most satisfactory. It also contains an excellent frontispiece portrait of the poet, rendered in photogravure, and, at the head of the introduction, which is by the Rev. John White Chadwick, is an excellent reproduction of the house where "Thanatopsis" was written.

The illustrations are thirteen in number, and illustrate nearly every phase of the beautiful poem. The book is bound in vellum cloth, with gilt top, and the color of the cloth is an agreeable green, entirely appropriate to the subject Price, in a box, $2.

Photographisches Notiz and Taschenbuch fuer die Praxis. von Lt. Ludwig David and Charles Scolik. Wm. Knapp: Halle, a/S, Publisher.

The third edition of this interesting little work appears in entirely new shape and form, certainly a great improvement on either of its two predecessors, and assumes at least to some extent the features of Deutsche Photographen Kalender, which we say in compliment to Taschenbuch, as well as to its alleged prototype. We should not be at all surprised to see the next of its issue to be transformed into an Annual of Photographische Rundschau, of which one of its authors is the distinguished editor.

The work, in its present state, is possibly not quite equal in general interest to others of similar kind, but comprises in its judiciously selected formulas very valuable information to amateur and to professional. They comprise all the newest things in photography, Pizzighelli's new printing-out process is described in detail, and also the developing agents amidol and methol.

The negative register with its blank spaces can only be appreciated by those who at times have been in need of just such tables.

Extremely pretty are the illustrations. The portrait of Fritz Luckhard, the frontispiece, has no interest for us, excepting as a good photogravure, but "Aus Sexten in Tyrol" is a piece of artistic work, and "Manöver Skizze" and "Heerde in Waagfluss" are accomplishments of the lichtbildkunst of highest perfection. "Lauten Schlagerin aus Scolik's Atelier" and the magnesium flash-light "Nach Tisch" are also of high order.

With but one interruption the book has appeared once every year. We can place it properly among the photographic year-books, and place it with much pleasure in their front ranks.

The Columbia Daily Calendar remains the only valuable daily pad calendar. The calendar for '93 is of the same general design as that of previous years, consisting of 366 leaves, one for every day in the year, and a calendar for the entire year. The day of the week, of the month and of the year are given, and on each leaf is a short sermon on the "Gospel of Outdoors, Health, and Happiness," with valuable hints on practical road-making. The leaves are so arranged that there will be no stub left, and each one can be referred to at any time during the year. The pad is upon a metallic stand of ivory black, arranged so as to rest upon the desk at a convenient angle. The pad matter, which in the aggregate is enough to make a book, is all fresh and new, and is of more permanent value than that of any previous calendars. The calendar is issued by the Pope Mfg. Co., of Boston, New York and Chicago.

Mr. Val. W. Starnes, of Augusta, Ga., who contributed the suggestive little article on "Success under Difficulties," in the holiday number of the magazine, sent us a number of excellent bromide prints from negatives made on the Western tour. The plates used were Harvard's orthochromatic, and also the Keystone orthochromatic films by the same maker. All were instantaneous exposures and all are very well made. They are characteristic subjects of the West, and includes groups of Indians, Life in the Barracks, A Typical Western Home, A Prairie Schooner, etc.

E. W. Newcomb & Co., the enterprising dealers in photographic apparatus and supplies, at 69 West 36th Street, sends us a unique Christmas greeting, illuminated and illustrated.

"A Merry Christmas to you and a *most happy, prosperous and pleasant New Year, that shall reward you with abundant health, prosperity and peace*," reads the message. We wish our good friends the same thing, and many of them.

Hirsh, Kahn & Co., the opticians and dealers in photographic supplies, at 333 Kearny Street, San Francisco, Cal., are certainly enterprising merchants. They believe in cultivating the minds of the profession, and always carry a complete stock of the various photographic books and publications. "*Keep apace with the progress of photography*," is their motto, and their latest indication of enterprise is a postal with reply postal attached, soliciting subscriptions for the various photographic magazines for 1893. THE PHOTOGRAPHIC TIMES heads the list.

Messrs. Bradfisch & Pierce have certainly rendered a decided benefit to Photographers in the improvements which they have made on their perfected aristotype paper. The hardner used with the combined bath, is a great advantage. It renders the film very tough and also waterproof, and the preparation prevents that yellow and green color which occurs with other baths.

The latest specimens sent from Messrs. Bradfisch & Pierce's factory retain all the beautiful qualities of detail and half-tone of the first specimens with these added advantages.

The Catalogue of Photographers' Sundries sold by Jas. H. Smith & Co., of 186 Wabash Avenue, Chicago, should be in the hands of every practical photographer, as it describes and gives the price of many useful articles.

The Dining Club of THE PHOTOGRAPHIC TIMES desires to express its appreciation of the very acceptable gift recently sent it by Mr. John Carbutt, of Philadelphia.

Record of Photographic Patents.

488,331. Combined Camera and Photograph Exhibitor. William V. Esmond, Chicago, Illinois.

488,705. Photographic Negative Retoucher. Albert J. Bennett, Woonsocket, R. I.

488,799. Photographic Camera. William Sanders, Liverpool, England.

488,810. Photographic Camera. Salomon Hirschfelder, Munich, Germany.

SOME OTHER DAY, PERHAPS.

"You wouldn't think that little thing on her mantel has the advantage of me?"

"How?"

"It's a photograph-holder (hold-her) and that's more than I may do!"

Queries and Answers.

1 MRS. C., Lexington, Ky.—Is there any other way than timing to tell when a print is thoroughly fixed?

1 *Answer.*—Timing is evidently the best method with albumen and gelatine prints. With plain paper it can be easily determined whether a print is fixed or not, by looking at it by transmitted light. As the hypo bath has no other function than to fix, that is to dissolve the chloride of silver not acted upon, we advise our fair correspondent not to hurry, rather to leave the print a little longer in the fixing bath.

2 AMATEUR PORTRAITURE.—My light is of southern exposure, and works too rapidly altogether. To make it more controllable I intend to paint the panes of glass with something translucent or semi-diaphanous. What do you advise me to do?

2 *Answer.*—Very thin boiled starch paste mixed with a little crude starch, gives an excellent cover for glass. It can be applied with a brush, and when not wanted is easily removed with a sponge dipped in hot water. But you may do still better, merely by covering the glass with one thickness of fine English tissue paper.

3 PHILADELPHIA.—Do negatives not intensified increase in intensity by age?

3 *Answer.*—A discussion on this subject several years ago resulted in the verdict: No perceptible changes have been noticed.

4 MISS FRANCIS O'N. is much interested in the personalities of Dr. Eder, and asks: Is he an old man?

4 *Answer.*—Dr. Joseph Maria Eder was born at Krems, Lower Austria, in the year 1855, and is consequently but 38 years of age. But, Miss O'N., he got married a short time ago!

5 VEXED.—A professional photographer complains of his albumen paper to soften in the first washing, before toning it, and asks if alum in the wash-water would not remedy the evil? He thinks his paper is not pure albumen but the coating is mixed with gelatine.

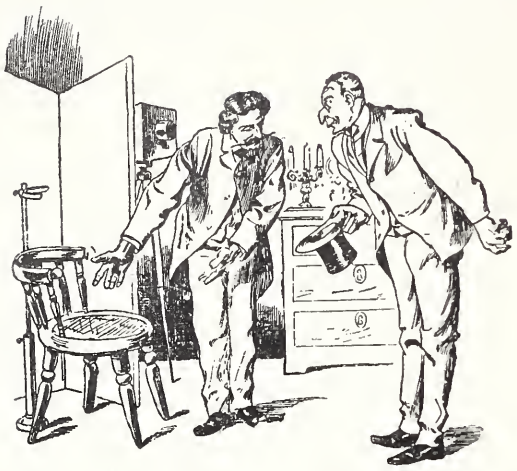
5 *Answer.*—If there is any doubt about your paper being just exactly what it is wanted to be, why not discard it, and take others? There is plenty of first-class albumen paper in the market. Why do you not use the "Three Crown"?

Your paper may be, after all; what it pretends to be. Perhaps your silver solution is not strong enough. It should register 50deg. on the scale of the hydrometer; or it may be too alkaline. A little alcohol in the bath may possibly remedy the evil.

If your paper is not perfectly dry before it goes to the fuming box, the ammoniacal fumes will attack and soften the albumen film.

Never fear of a mixture of albumen and gelatine being palmed off for pure albumen; it does not pay to do it.

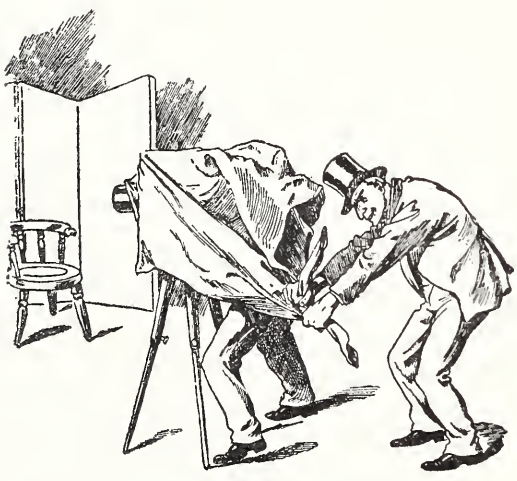
THE PHOTOGRAPHER AND THE THIEF.



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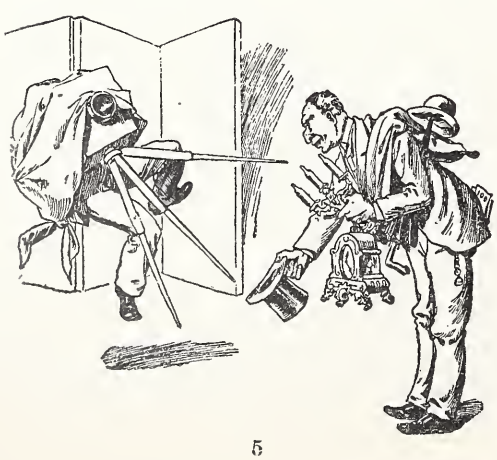
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New York Lustige Blätter.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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Weekly (illustrated) for one year.....$5 00
" " " six months..... 2 50
" " three month's trial..... 1 00

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On Foreign Subscriptions $1 00 is added to pay postage.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Subscriptions to THE PHOTOGRAPHIC TIMES received by all dealers in photographic materials in this and foreign countries, also by the American News Co. and all its branches.
With *Sun and Shade* (regular subscription price, $4)..... 7 50

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Size of advertising pages, 6¼x9¼ inches; outside size, 8½x11¾ inches.
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Quarter page, per insertion..... 8 00
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Discount for term contracts.

Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

TO BUYERS OF PHOTOGRAPHIC GOODS.

NEW YORK, December 26, 1892.

Many packages are lost in transportation by mail and sometimes our friends, though they do not hold us responsible, are likely to question whether lost packages were properly addressed by us. With a view to guard against loss so far as possible, we would propose where our patrons are willing to incur the expense, to attend to the insurance of mailed packages, and to the collection of insurance for them in case of loss.

The cost for *insurance* is as follows:

By *registered* mail, 5 cents on parcels valued at $25 or less; 10 cents for parcels valued at from $25 to $100.

Cost of registering mail parcels or letters, 10 cents each.

By *unregistered* mail, 5 cents on parcels valued at $5 or less; 10 cents for parcels valued at from $5 to $10.

If you desire to insure your mail parcels, charging you at the rates named above, please advise us in all cases when ordering goods by mail, and thus much oblige,

Yours truly,
THE SCOVILL & ADAMS CO.,
423 Broome Street, New York.

The Scovill & Adams Co, have just received a fresh importation of Dr. Andresen's amidol, put up in pound, half pound, quarter pound and ounce packages. They also have a fresh lot of S. P. C. amidol developer in solution ready for photographers' uses. The popularity of this new developer seems to be increasing all the time.

"I want to congratulate you on the Christmas Number of THE PHOTOGRAPHIC TIMES. It is by far the finest number published," writes J. R. SWAIN, of Dana, Ind.

"I have never found a plate to equal the Carbutt Orth. No. 27, in making brilliant negatives."

VAL. W. STARNES,
Summerville Delivery, Augusta, Ga.

MORE TESTIMONIALS FOR "THE ANNUAL."

"The Annual is a beauty."—H. V. EGBERT, Akron, O.

"It is a magnificent and indispensable helper to every photographer, be he never so expert in the work of the camera."—*Wilson's Photographic Magazine.*

"We must say it far exceeds our anticipation * * * * No wide-awake photographer can afford to be without this valuable book."—*Photographic review.*

"I must say that The American Annual of Photography for 1893, is a wonderful work, and far ahead of that for 1892. It is well called 'the greatest Annual on earth.'" —W. C. WALKER.

"Handsome," "beautiful," "valuable," or even more expressive words are as inadequate to convey an intelligent idea of the work, as a trip to Mandota would impress one with the metropolitan character of the great city where the work is published.—*The Tripod.*

The American Annual of Photography and Photographic Times Almanac for 1893.

No one but a bookmaker can fully appreciate the labor, and consequently the value, of such a magnificent volume as THE TIMES ALMANAC for 1893. It came to us promptly on time, December 1st. The copy before us is cloth-bound, illustrated with twenty-seven full-page illustrations by various processes, of a variety of subjects; containing nearly 400 pages of reading matter, a countless number of advertisements, and a variety of articles which, it seems to us, is very hard to equal. Nearly every detail of photographic practice seems to have been attended to. Articles are here on photographing all possible subjects; articles on subjects which cannot be photographed; on different methods of manipulation in all departments; on lighting; on posing; on optics; on everything which pertains to photography—even on envelopes for inclosing photographs and placing them in good shape before the public. The sun, moon, and stars, and the earth all come in for their share of consideration. Predictions as to the paper of the future; as to the best developer of the present, and so on to the end of writing, are given, until over 260 pages are covered. These articles are amply illustrated; some of the illustrations are singularly beautiful. After all this comes a record of photographic progress; standard formulas; tables; diagrams for exposure; lists of magazines, societies, public dark-rooms; patents; patent and postal regulations—everything seemingly that the photographer could wish for, until almost the 400th page is reached.

We started out by saying that no one but a bookmaker could understand the real labor that was entailed in producing this book. Likewise the executive ability and editorial power necessary to produce it are considerable. It is a magnificent and indispensable helper to every photographer, be he never so expert in the work of the camera. It could not possibly be produced at the price at which it is offered except for the immense quantity—18,000, we believe—issued. Yet, as may be seen by the advertisement, it can be supplied to photographers, when clubbed with the other Annuals, at a very moderate price. Everybody will buy it.—*Wilson's Photographic Magazine.*

TRY DR. ANDRESEN'S AMIDO DEVELOPER.

Business Notices.

PHOTOGRAPHERS, see advertisement of Woolford & Sinn, page iii., in regard to albumen enlargements, and double your business.

"THE DEVELOPER OF THE FUTURE."—S. P. C. Amido Developer in solution ready for use. 8-ounce bottle, with directions, 50 cents.
THE SCOVILL & ADAMS CO.

WANTED.—Volume 13 of THE PHOTOGRAPHIC TIMES. Address, with price, OTTOMAR JARECKI,
Erie, Pa.

AN 1889 American Annual of Photography, in paper cover, in perfect condition, for sale. Price $1. Address "ANNUAL," care THE PHOTOGRAPHIC TIMES Office.

"COLD BATH" PLATINOTYPE.—Superb effects in landscape! Very easy for amateurs to work! Send for circulars. WILLIS & CLEMENTS,
39 South 10th St., Philadelphia.

BEST EFFECTS CAN BE HAD on the New Eagle Dry Plates. For sale by
THE SCOVILL & ADAMS CO.

PHOTOGRAPHIC BROKERAGE.—Established especially to furnish carefully selected outfits of any make or grade to those living at a distance. Address
C. M. BROCKWAY, 33 Worth St., New York.

SOUTHERN PHOTOGRAPHERS!—I desire to purchase or exchange prints of "Scenes peculiar to the South," cotton picking and characteristic negro scenes, etc. ALLMAND McKAY GRIGGS,
Clinton, N. C.

A BARGAIN.—5 x 7 Folding Kodak nearly new, cheap for cash. Address "CAMERA,"
98 West Ave., Rochester, N. Y.

WANTED.—THE PHOTOGRAPHIC TIMES of September 4, 1891, (No. 520). HERBERT F. SMITH, Secretary Syracuse Camera Club. 322 South Salina Street, Syracuse, N. Y.

RAPID RECTILINEAR LENSES AT COST.—4 x 5, $5; 5x7, $12; 5x8, $7; 6½x8½, $8; 8x10, $12; 10x12, $18; 11x14, $24. Write for price list.
W. P. BUCHANAN, Importer, Philadelphia.

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COLD PROCESS PLATINUM PAPER.

Simple in manipulation, requires few chemicals, results like engravings.

A sample sheet by mail, cut any size desired, *with full instructions*, $1.00. (A sheet cuts 24 4 x 5, 12 5 x 8, 9 6½ x 8½, etc.) TRY IT. It suits everybody.
E. W. NEWCOMB & CO.,
Send 10c. for our catalogue. 69 West 36th St., New York.

A No. 2 SCOVILL SCIOPTICON, as good as new; cost $50; will sell for $25. May be seen at The Scovill & Adams Warerooms, 423 Broome Street.
"LANTERN."

FLASH-LIGHTS AND HOW TO TAKE THEM! A complete treatise on Flash-Light work. Fully illustrated by Louis Clarence Bennett. Price, 50 cents. Order a copy now from THE SCOVILL & ADAMS CO.

FOR SALE.—Pair Stereo. Lenses, imitation Dallmeyer, price $12; one 10-inch Entrekin Oscillating Enameler, price $12. All the articles here offered are in perfect order. Address T. W. ROGERS,
Carmichaels, Pa.

TRY IT!—"The Developer of the Future," Dr. Andresen's Amido. In solution, ready for use, 50 cents per 8-ounce bottle, with full directions. Dr. Andresen's Pure Amido in 1-ounce bottles, 75 cents per bottle.
THE SCOVILL & ADAMS CO.

PERFECTED BRADFISCH Aristotype Paper leads the world! It does not stick, nor does the surface of the print rub off.

USE WUESTNER'S New Eagle Ortho Plates. None better. Sold by
THE SCOVILL & ADAMS CO.

THE UNDERSIGNED has a few 6x5 Dallmeyer Rapid Rectilinear Lenses which he will sell for 20 per cent from list prices. These lenses are a late importation and are all warranted. Address "TOURIST,"
care The Scovill & Adams Co.

THE FINEST Platinotype Solar Enlargements and contact prints, in black and sepia, are made by
THE PLATINOTYPE CO.,
39 South 10th St., Philadelphia.
Send for price lists.

FOR SALE.—A first-class photograph gallery doing a nice business; has the largest and best location in the city. For particulars call or address
J. NEUMANN, 403 Main St., Buffalo, N. Y.

A GENUINE BARGAIN.—Bound volumes of the *Philadelphia Photographer* for 1885 and 1889, each year complete in one volume and bound in full morocco leather. Original cost, $7 each. Will sell for $3 per volume. Sent to any address by express on receipt of the amount. *Anthony's Bulletin* for 1886 and 1889, bound in red cloth, uniform with the publisher's binding, each year complete in the one volume with all the illustrations. Cost $6 per volume. Will sell for $2 each. Address
BOUND VOLUME,
Care of THE PHOTOGRAPHIC TIMES.

PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never lose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
C. M. DARLING, 122 West 36th St.

LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

A BARGAIN.—No. 1 Kodak, complete and unbroken seal; price $15; cost $25. Address
LEFFERTS, care PHOTO TIMES Office.

NOW READY.

MORAN'S BARGAIN LIST No. 39.

It will pay you to send for it before ordering any goods in the photo line.
R. H. MORAN,
396 Broome Street, New York.

BOUND VOLUMES OF "THE PHOTOGRAPHIC TIMES" for sale.—The volumes XI. to XXI. inclusive bound, and in perfect condition, are offered for the moderate sum of $40.00; will not sell single volumes.
Inquire of the Editor of this Magazine.

S. P. C. AMIDO DEVELOPER IS THE LATEST.

ARTISTIC LANDSCAPES FROM NATURE, representing the Four Seasons, in photogravure, size 11 x 14, for framing; $1.50 per set. Sent postpaid on receipt of price. MONTCLAIR PHOTOGRAVURE PUBLISHING COMPANY, Montclair, N. J.

S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography; no other has attained to equally fine results.

THE SCOVILL & ADAMS CO.,
423 Broome Street, New York.

We offer the following stock of Eastman's Bromide Paper at the appended special prices for the next thirty days only, to reduce our stock preparatory to inventory:

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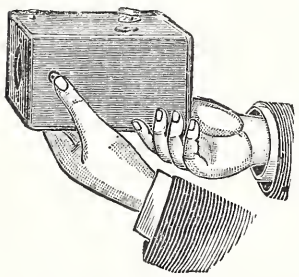
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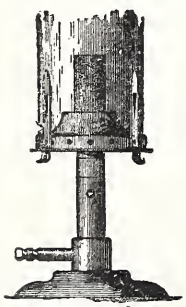
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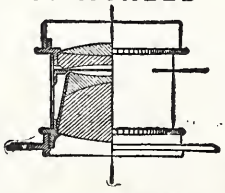
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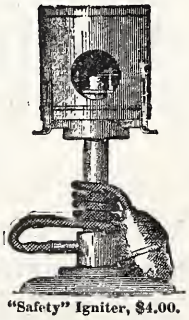
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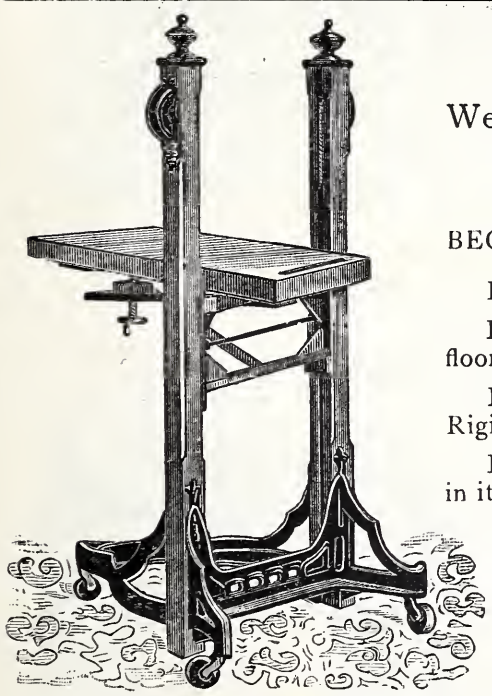
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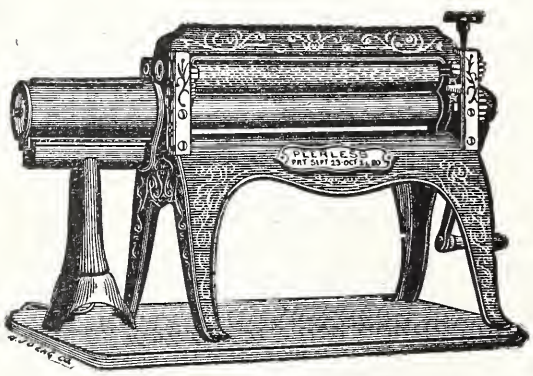
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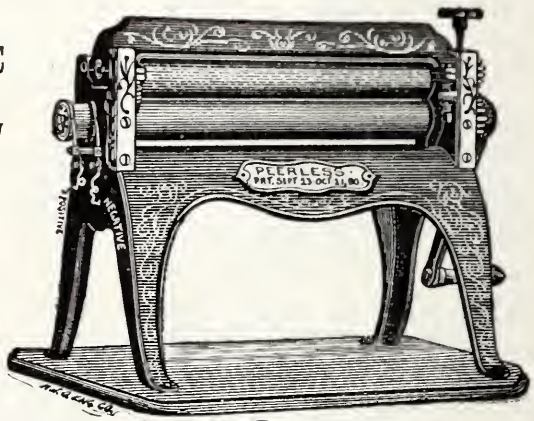
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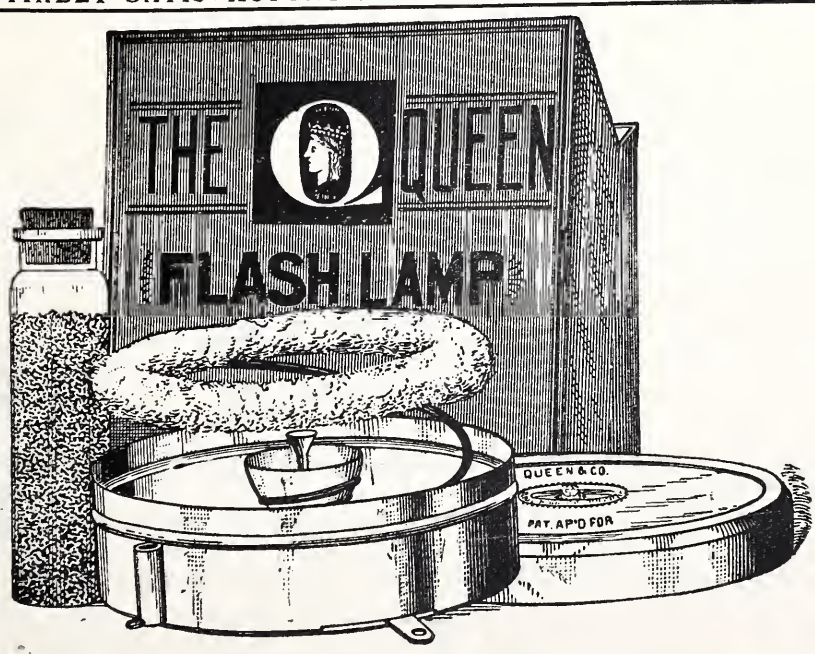
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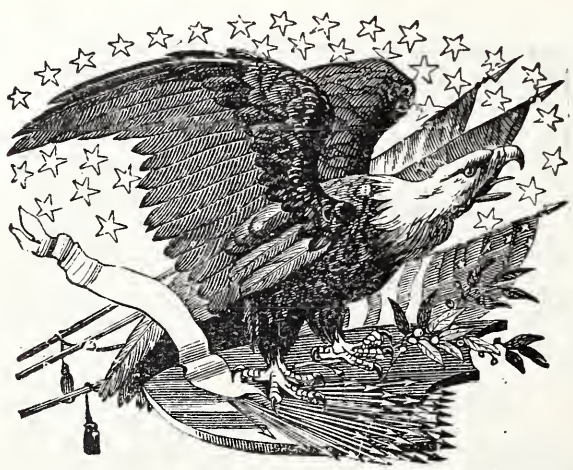
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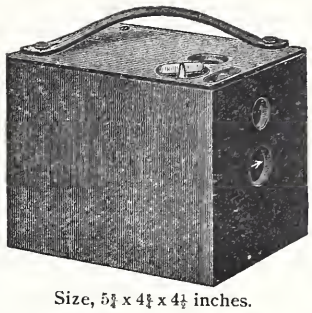
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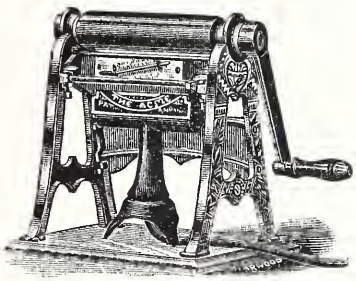
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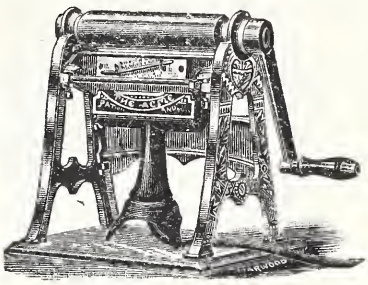
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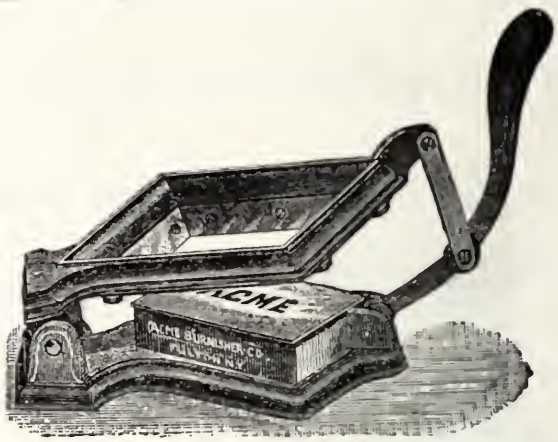
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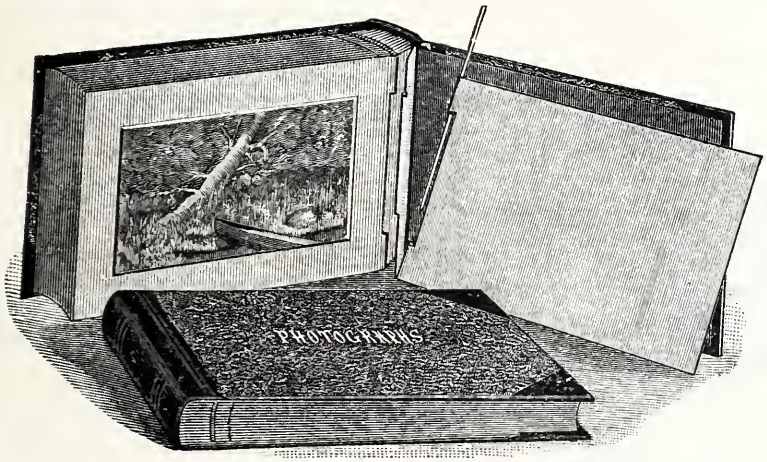
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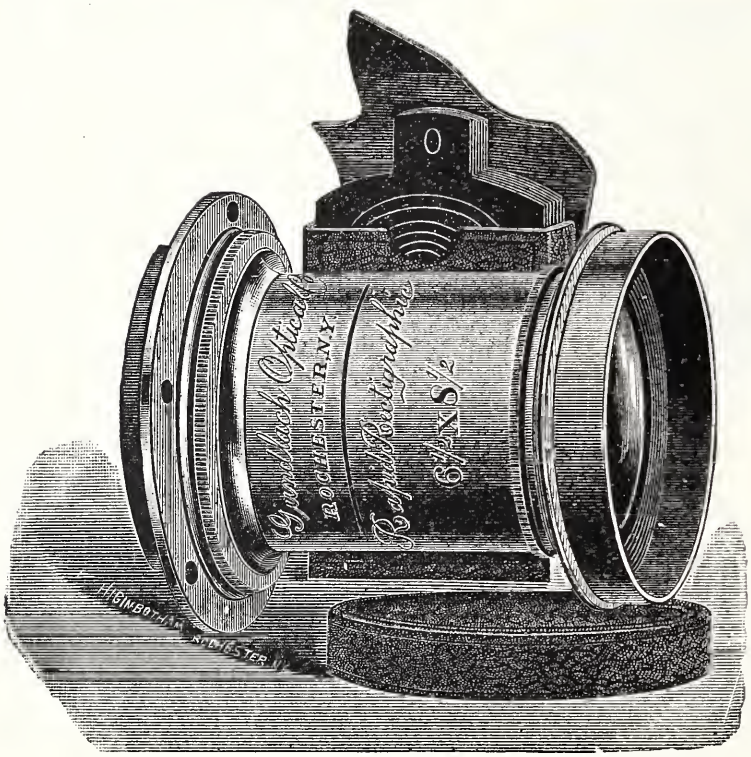
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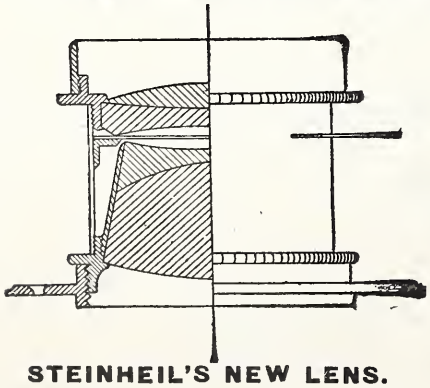
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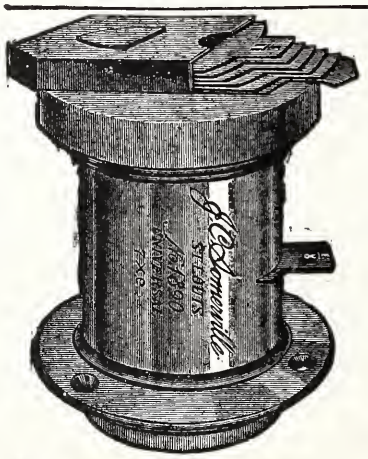
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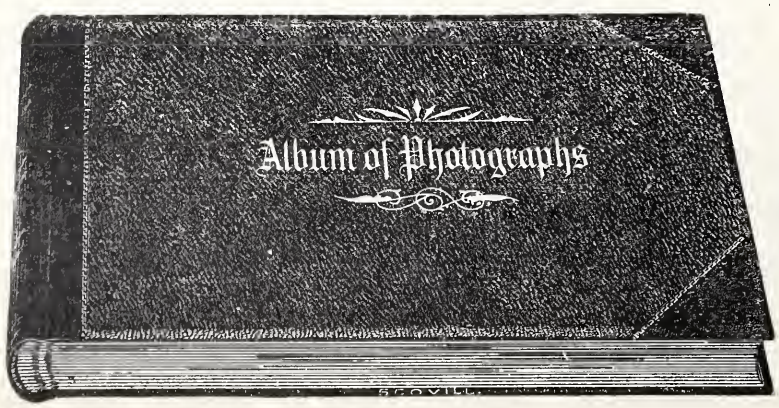
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Have Discarded Albumen.

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ARTISTS AND PHOTOGRAPHERS, J. J. OVERTON.
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Cleveland, O., Nov. 28, 1892.

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Rochester, N. Y,

Gentlemen:

* * * * * * * * *

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Solio a Bonanza.

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Very respectfully,
J. M. BRAINERD.

These are but fair samples of the testimonials which we receive from all over the country.

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(OVER.)



U. S. S. CHICAGO

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JANUARY 13, 1893. NO. 591.

THE U. S. S. CHICAGO.

WE take pleasure in presenting our readers this week with another picture by Henry R. Taylor, the gifted amateur photographer of New York City.

The picture is an excellent one of the flagship of the famous White Squadron as she lay at anchor in Newport Harbor last summer.

A Harvard plate was used in a hand camera with a Ross lens, and the exposure was instantaneous. A triplex Prosch shutter was employed with strongest spring in last notch. The plate was developed with pyro and potash.

WILL YOU EXCHANGE PRINTS?

It has been calculated that there are at least one million negatives in this country stored away on the shelves of amateurs from Maine to California. Many of these amateurs would probably be glad to exchange prints and lantern slides from these at present unused negatives if they knew the addresses of others who also would like to exchange prints.

THE PHOTOGRAPHIC TIMES therefore proposes, if sufficient encouragement is given the plan, to publish a supplement, monthly, or oftener, as the requirements of the case may demand, containing the addresses of those willing to exchange prints with a list of their offers and wants. This supplement will be sent to all those whose addresses appear, separately, on receipt of the postage required to mail it.

Are you interested in the matter? If so, kindly let us hear from you on the subject, and express your opinion especially on the three following points:

First: Does the general scheme for exchanging prints meet with your approval?

Second: Would you be likely to avail yourself of it, if undertaken?

Third: Have you any suggestions to offer as to the details of the plan.

Kindly address your replies to the editor of THE PHOTOGRAPHIC TIMES EXCHANGE SUPPLEMENT.

A GOLD MEDAL FOR MR. IVES.

THE Special Committee appointed by the Board of Directors of the Photographic Society of Philadelphia "to take into consideration the advisability of some form of recognition by the Society of Mr. Ives' work in connection with Composite Heliochromy," has reported that in its opinion the work of Frederic E. Ives "is worthy of the highest form of recognition which the Photographic Society of Philadelphia can give."

To that end the Society has adopted the following:

Resolved, That the Board of Directors recommend to the Society the adoption of the following preamble and resolutions:

WHEREAS, Frederic E. Ives, of Philadelphia, has, by the application of his new principle in composite helichromy (dating from November 21, 1888), made a practical solution of the problem of recording and reproducing by photographic means the colors of nature; and

WHEREAS, Mr. Ives has, not only in this connection but in many other ways, notably in the field of photo-mechanical printing processes, orthochromatic photography, and optical projection, made distinguished contributions to the progress of the art and science of photography; and

WHEREAS, The Photographic Society of Philadelphia is incorporated for the special object of increasing and diffusing "the knowledge of those natural laws which relate to the action of light, and particularly to promote improvements in the art of photography;" it is therefore

Resolved, That as a special recognition of the eminent scientific labors of Frederic E. Ives, a gold medal is hereby awarded to him by the Photographic Society of Philadelphia.

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THE publishers of THE PHOTOGRAPHIC TIMES are led to believe, by the number of reports which have been coming to them of the non-delivery of THE PHOTOGRAPHIC TIMES within a reasonable time after its having been mailed at the New York Post Office, that the New York postal facilities are inadequate. They are strengthened in this view by similar complaints which have been reported by publishers of other periodicals. The publishers of THE PHOTOGRAPHIC TIMES will therefore thank its subscribers if they will promptly report all delays in the receipt of the magazine. Of course the responsibility of the publishers ceases when they have delivered the magazine, properly addressed and stamped, to the postal authorities; but they desire to exhaust every means in their power to insure a prompt and safe delivery of the magazine to its subscribers.

THE CAMERA IN AFRICA.

DR. JAMES JOHNSTON, the African explorer who undertook to cross the dark continent, travelling from the west coast of Africa eastward, has returned from his explorations, having succeeded in all he undertook.

Dr. Johnston arrived in New York, Friday, December 29th, on the steamer Lahn, having been gone over two years, fourteen months of which he was buried in the wilds of Central Africa beyond the reach of any white man.

He comes back with a large collection of 8 x 10 negatives made with the Scovill camera, and Carbutt plates which he carried with him. His photographs all seem to be very fine, and the camera is exactly as good as the day it left the warerooms of The Scovill & Adams Co., save of course the external blemishes which it sustained in its journeys through the jungles of tropical Africa. It sustained many tumbles, and was three times under water; but, as the doctor asserts, it makes as good a picture to-day as it did the day he purchased it. The photographs will be produced by some "process" and will be used as illustrations to the book which Dr. Johnston is now preparing for the press, It will be a large and important work, covering his entire exploration.

Dr. Johnston, unlike Stanley, and other famous African explorers, made his wonderful journey across the entire continent of Africa with only a very small train. He injured no native during the entire journey, accomplishing his way as he said, much better by the employment of tact and strategy, then by the wanton use of fire-arms.

Dr. Johnston sailed first to the west coast of Africa, where he lingered about three months in learning the native tongues. He then plunged into the hitherto unexplored interior, and after a journey of fourteen months, arrived on the east coast, at Zanzibar. Thence he sailed to England, and from there to New York. He has already returned to Jamaica where he resides.

The object of Dr. Johnston's expedition was many-fold. He desired first of all to gratify his personal longings to know more about the interior of the vast unexplored Continent with a special view to finding out the condition of the native tribes for receiving the instruction of white men. It was therefore mainly philanthropic. But he also had scientific questions to investigate, and a personal love for travel and exploration to gratify.

He succeeded in all his undertakings, as he said, much beyond his greatest expectations, and returns highly satisfied with his journey, though somewhat broken in health by the exposures and hardships incident to such a journey. It is to be hoped, however, that the doctor's rugged Scotch constitution with rest in the congenial climate of his home, will restore him to his wonted health and strength.

We shall probably have more to say about Dr. Johnston's journey across the African continent, especially from a photographic point of view, in later issues of this magazine.

TEN PER CENT. SOLUTIONS.

"UNCLE ANDREW," of *The Beacon*, in looking over Volume XVIII. of THE PHOTOGRAHIC TIMES finds one of my articles on the above much discussed question, and, taking the same ground which my esteemed friend, Thomas Kennedy, occupied at the time of my writing, objects to my method of making such solutions, in the December Number of *The Beacon*. The objections made are decidedly one-sided, and do not treat the subject at all broadly, which I will endeavor to show. I shall also try to prove that there is no other method of making a 10 per cent. solution than the one I have already explained in these columns.

All my opponents have so far spoken only from the photographer's point of view, and a 10 per cent. solution of bromide of potassium in water seems to be all they have in mind, while I have always discussed the question with reference to all possible soluble substances and all possible solvents.

Weight and volume are entirely different things, and in the establishment of a doctrine we cannot accept both, but must give preference to one and discard the other. Specific gravity interferes

when we accept volume as our standard, so weight only is reliable.

Let us take for example a solution of nitrate of silver in a mixture of equal volumes of alcohol and water, or of gun-cotton in ether and alcohol. To make solutions of this kind containing but 10 per cent. there is no other possible way than to resort to the balance.

A point that all advocates of "Uncle Andrew's" doctrine have not at all considered is the shrinkage which occurs when mixing liquids differing very much in specific gravity. With alcohol and water it is nearly 3 per cent., and much more so with alcohol and ether.

Then there is the temperature, which with very volatile liquids has never been thought of by my opponents.

"Uncle Andrew" uses a very good argument against his own doctrine, the unreliability of our graduated glasses. Let us assume he wants to make 20 ounces of a ten per cent. solution with a graduate. The ounce mark requires 1 ounce and 1 drachm to be reached, and the three-ounce mark perhaps 3 ounces and 5 drachms. These are facts found in my every-day experience. Where, then, would his ten per cent. solution be? A good balance and correct weights are the only means to attain to correct results.

"With articles that come in ounces, the photographer need not take the trouble of weighing the solids. They are always ounces of 437.5 grains," says "Uncle Andrew."

Not always, begging your pardon, "Uncle." Gun-cotton, for example, is dispensed in apothecary ounces, and whether or not chemicals sold in ounces are always and invariably of the presumed weight is a question I very much hesitate to answer affirmatively. "Uncle Andrew" might gain some very interesting information by looking more closely into this particular matter.

As for the two different kinds of ounces used by American and English photographers, THE PHOTOGRAPHIC TIMES has entirely discarded that of 437.5 grains.

"Unless specially directed otherwise the ounce in the case of solids is understood to be the Troy ounce = 480 grains, and in the case of fluids, the fluid ounce of the United States Pharmacopœa, = 480 minims."

So says "The American Annual of Photography," and in all publications of The Scovill & Adams Company these same rules are adopted.

As to the practical side of these lengthy and sometimes annoying questions, do you not agree with me that it is all a "tempest in a teapot"? Tell me candidly have you ever been in need of say seven-tenths or three-tenths of a grain of potassium bromide, or has it not impressed you, when we translate 100 c.c into 3½ ounces that the solution works here just as well as it does in Germany? or do we not obtain as fine tones with a gold solution 15 grains to 16 ounces as when one grain of it is dissolved in 400 c.c.?

You say: "The man who employs the formula is of more importance than the formula itself." That is undoubtedly true. We begin to develop a plate with carefully compounded and accurately measured solutions, but on account of the many modifications necessary when the process is going on the developer is far different when the plate is removed from it than it was when the process began.

Some time ago a good deal was said about "tentative development." We cannot develop our plates by rule of thumb, or by strict formula. Develop "tentatively" and we shall not require 10 per cent. solutions.

Charles Ehrmann.

THE FERROTYPE AND HOW TO MAKE IT.

THE DEVELOPER.

Water	64 ounces
Sulphate of potassium	1 ounce
Protosulphate of iron	1 ounce
Iron and ammonia	2 ounces

Dissolve, filter, then add 3½ ounces acetic acid.

This is one of the best developers for ferrotypes; works slow, and gives fine details.

ANOTHER.

Water	16 ounces
Protosulphate of iron	1 ounce
Acetic acid	1 ounce
Alcohol	1 ounce

The alcohol is not necessary if the silver bath is new. After the bath becomes saturated with alcohol and ether from the collodion, then it is necessary to add the alcohol to the developer to make it "take hold" well.

In developing ferrotypes the developer is flowed evenly over the plate. It requires considerable skill to do this correctly. Beginners usually develop too far, making a dead, flat picture.

Fix with cyanide of potassium 2 drachms to 8 ounces of water.

VARNISH.

Gasoline, 74 deg.	10 ounces
Sulphuric ether	2 ounces
Gum damar	1 ounce

Care must be exercised in using this varnish not to open it near a lamp or stove, as it is very explosive.

It dries without heat.

A great many ferrotypers attend picnics and country fairs in tents. I hope a few words in regard to these tents will not be out of place. They should be made from the best 12-ounce brown duck. By brown I mean butternut. This will not only cut out all the extra light but will turn the water in the hardest storms. Painting the top of a tent only rots it, causing it to break in a short time.

J. R. Swain.

NOTES ON THE NEW AMIDOL AND METHOL DEVELOPERS.

[Advanced sheets from the Journal of the Photographic Society of India, sent "with the Author's Compliments."]

I LATELY received small supplies of these new developers; and though I have not been able to examine them fully, the following short notes may be of interest:

Amidol appears in small crystals, with a peculiar gray silvery appearance. It is readily soluble in water, but the solution quickly discolors in the air. It is only slightly soluble in alcohol, the solution turning a pale yellow color. It is a form of diamidophenol with the formula $C_6H_3 \overset{OH}{\underset{(NH_2)}{}}$. Ferric chloride turns the solution a deep crimson. Bichromate of potash turn it a brownish red, and a precipitate is formed in standing. Bromine water turns it red, the color fading very much on standing. Potash permanganate turns it a deep crimson, becoming brown and muddy after a time. Alkalis turn the solution green. With carbonate of lithia and ammonia the green color darkened, and then gradually became a bright yellow, which afterwards darkened. I have not noticed any fluorescence in the solutions after development, as is the case with many of the newer dry-plate developers.

The peculiarity of amidol as a developer is that it can be used without alkali; by itself it is only a very weak developer; with alkalis it gives weak images very liable to stain; but in solution of 5 parts in 1,000 of water, with 50 to 100 parts of sodium sulphite, it becomes a very energetic developer giving good density and detail with very short exposures. According to Dr. Eder the addition of sodium sulphite increases its activity, and the ordinary proportion may be doubled.

Amidol	20
Sodium sulphite	200
Water	1,000

Diluted with from 2 to 3 parts of water.

This when freshly made up is an excellent and powerful developer. The solutions, however, whether concentrated or dilute, darken and lose their efficiency and developing power. I think I have found what may be a remedy for this.

During the year I have been making observations of the behavior of various developers when electrolyzed in a voltameter with platinum or silver electrodoes, and one of the earliest experiments with amidol was to test it in the voltameter with platinum electrodoes, passing the current from two-pint bichromate bottle cells through a solution made up as for developing. The E. M. F. of the two cells was about 4 volts, but was reduced to about 1.5 volts when passing through the solution in the voltameter. In 20 minutes 1.4 c.c. of hydrogen were given off from the cathode, which is rather below the average of other developers with the same battery. The anode became surrounded by a dense deep yellow solution, but otherwise the liquid in the oxygen tube did not change color. The cathode had a tendency to keep coated with bubbles of hydrogen, but the color of the solution in the hydrogen tube was unchanged. At the conclusion of the experiment, the solution, which was slightly yellow, was put away in a bottle; and it was observed that whereas some of the same developer which had been used and put away and also the stock solution became very much discolored, this electrolyzed solution remained quite clear and colorless. Moreover, whereas the dilute ordinary developer which had been kept six days was found to have entirely lost all power of developing, the electrolyzed solution (A) which had been kept for four days was found to work with even somewhat more vigor than a fresh solution. Not only so, it retained its freedom from color and its developing powers for some time longer, even after use, as noted further on.

In a second trial some discolored stock developer was taken and diluted with three parts of water, and then electrolyzed in the same voltameter with the current from 4 gravity Daniell cells. The strong solution had a deep orange-red color, but on adding water it took a claret color. The E. M. F. of the battery was about 4.4 volts, which was reduced in the voltameter to about 3.7 volts, the current being 12 milliampères with a galvanometer resistance of 100 ohms. In this case the evolution of hydrogen was much brisker. In ten minutes 1.2 c.c. of hydrogen were given off; in twenty minutes 2.6 c.c., and in thirty minutes 4.1 c.c. The solution in the hydrogen tube became quite decolorized, while that in the oxygen tube gradually took an orange color. The color of the

solution generally remained of a claret color; and when the tubes had been removed, the current was allowed to pass directly through the solution, and gas was given off fairly freely at both electrodes. At the conclusion of the experiment this solution was also bottled off, and gradually took a pale orange color. It was used for developing nine days after electrolysis, and showed very strong developing powers. With a Steinheil antiplanet lens 7½″ focus at about *f*/10 and two turns of a Thornton-Pickard shutter, a Wratten Instantaneous plate was found to be greatly over-exposed; but a good negative was obtained when the aperture was reduced to about *f*/15, and the tension of the shutter increased to three turns. It was found, however, that the still older solution (A), electrolyzed with the bichromate battery about three weeks previously, which had much less color, had still stronger developing powers, *i.e.*, it gave a denser image. On the other hand, a fresh normal solution at 1 to 3, made from a discolored stock solution that had been kept for about ten days (B) gave only very weak images under the same conditions of exposure, etc., even with a preliminary treatment of the plate with a saturated solution of carbonate of lithia.

There seems, therefore, no doubt of the beneficial effect of the electrolyzing treatment, not only in increasing developing power, but in conferring keeping properties, and thereby greatly adding to the value of amidol as a developer, though it remains to be seen how the treatment can best be applied. I am not sufficiently acquainted with the chemistry of these new amidophenol compounds to be able to say what the effect of the electrolyzing action is, or what new and more permanent compound is produced. It would seem that there is some reducing action brought about with the evolution of hydrogen.

As it seemed desirable to ascertain whether there was any distinct relation between the developing power of these two developers (A) and (B) and the amount of hydrogen given off under electrolysis, they were electrolyzed under as nearly as possible similar conditions, with a current from 4 gravity Daniell cells passing through the voltameter, platinum electrodes being used as before. The old electrolyzed solution (A), with a current through the voltameter, of 3.25 to 2.8 volts and about 35 milliampères, gave off in 20 minutes 5 c.c. of hydrogen. The old stock solution, diluted with three parts of water, freshly mixed, as (B), was highly colored and with the same battery, gave off in 20 minutes 4.4. c.c. of hydrogen ; the E. M. F. through the voltameter being 3.25 to 3 volts, and the current 36 to 30 m.a., the resistance of the galvanometer being 10 ohms.

In the present stage of these voltametric experiments it would be premature to say that the strength of a developer varies in proportion to the amount of hydrogen given off by electrolysis ; but in one case it was very markedly so with Edwards' pyro-potash developer and a comercial pyro and ammonia developer. The current from 2 pint bicromate cells being passed through them for 20 minutes ; with the former 2.3 c.c. of hydrogen were given off ; while with the latter only .55 c.c. were given off in the same time. The pyro-potash acted as a good developer, while the pyro and ammonia only yielded very faint images under the same conditions. The difficulty in carrying out experiments of this kind is to insure similar conditions throughout, so that the results may be truly comparable. I hope, however, to bring forward this subject more fully at some future time after further experiment.

As far as I have been able to try amidol it certainly seems to have advantages, when used under the best conditions, of securing density and detail with a minimum of exposure, and will be useful for instantaneous work, interiors and other poorly illuminated subjects. In using it, it will probably be best to add it dry to a solution of sodium sulphite at 10 per cent. just as required for immediate use, using more sulphite, if necessary, to increase the power of the developer.

Metol appears to be a salt (said to be hydrochlorate) of mono-methyl-para-amido-meta-kresol. It is a white powder, quite soluble in water, the solution remaining colorless for an hour or so, but slowly turning yellow and brown. It is not very soluble in alcohol. Alkalis (ammonia, and lithia carbonate) darken the watery solution to a deep maroon brown. Acids (sulphuric, nitric, and acetic) show no visible change. Bromine water produces a pink tinge. With ferric perchloride the solution was only slightly yellow. Potassium bichromate darkens the solution immediately and gives a muddy brown precipitate. Potassium permanganate gives a purple color turning brown. The metol solution reduces nitrate of silver in solution very quickly in the form of a bright metallic powder, some silver being also deposited on the sides of the containing vessel. At first the deposit remains in suspension in the solution. Acetic acid does not prevent this reduction. The solution in both cases had a brownish pink tinge after precipitation of the silver. In some of these reactions peculiar odors were noticed, in some cases like phosphorus, in others a faint floral smell, and in others again a druggy smell, something like jalap.

Metol has the advantage over amidol that its solution with sulphite of soda remains perfectly colorless, and shows little tendency to change even in a half-filled bottle, though it slowly takes a yellowish tinge. The mixed developer after use takes a pale yellow color with a strong blue fluorescence.

With lithium carbonate I find it a very good developer, though not quite so powerful as amidol. With soda carbonate rather more density was obtainable, but I have not yet been able to give it a fair trial. Metol seems likely to produce good reversals with the trio-carbamides in dilute solution with a large proportion of alkali, and on the whole promises to be more generally useful than amidol. I hope to be able to report further about it next month.

CARBON *v.* PLATINOTYPE.

With reference to Mr. Portman's query in the November number of *The Indian Journal* as to whether prints in carbon are as permanent as platinotypes, I am inclined to say they are not. Under favorable conditions of climate and protection from damp carbon prints would probably last as long as platinum prints; but in this country (India) there is no doubt that carbon prints, though not actually fading as silver prints do, lose a great deal of their original delicacy and beauty, chiefly by the yellowing of the gelatine or the paper support. At the same time I find that unmounted platinum prints that have been kept here in albums for some years are quite as spotted and disfigured as the carbon prints, if not more so, though there is not quite the same appearance of fading in the lightest tints. I think the engraving black, standard brown, and sepia tissues of the Autotype Company are as permanent as anything of the kind can be, and may be safely used.

I do not recollect giving the opinion that carbon printing could not be carried on satisfactorly in the Andamans. It would be difficult of course, as in all tropical countries; but we work the process here all the year round, and I should think it could be done quite as well in the Andamans. The only thing is that one of the principal conditions of success here is to use very cold iced water in transferring the tissue to its support. If ice is obtainable at Port Blair, there should be no difficulty in doing this, We also use a proportion of spirit in the sensitizing solution—

Bichromate of potash	30
Liquor ammonia	4
Spirits of wine	150
Water	700

J. Waterhouse.

THE SWING-BACK AND ITS RELATION TO FOCUS AND PERSPECTIVE.

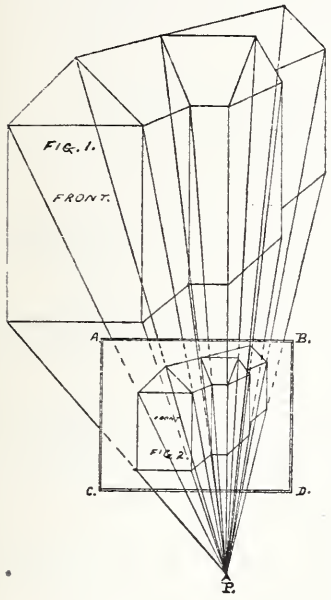
[From "The American Annual of Photography and Photographic Times Almanac" for 1893.]

It is generally understood that the swing-back is used to produce correct perspective; but just how it secures such result is, probably, not very generally understood. And its effect upon the focus is still less appreciated. It is the purpose of this article to try to explain these two effects of the swing-back.

It will, perhaps, be of service to some to explain the meaning of the word perspective as applied to the representation of a building, as the word is generally employed. The following definition, aided by reference to diagram "P," may help to make this clear. The perspective outline of a building, as viewed from any particular point, is such an outline as would be projected upon a vertical plane, placed between the building and the point of view, by lines drawn from every point of outline of building through this plane to the point of view. This plane is generally chosen paralled to one of the sides of building, and then all paralled lines (vertical and horizontal) of this side of building will be represented by parallel lines upon the projecting plane, but horizontal parallel lines of other sides of building will not appear parallel upon the projecting plane, but will converge as they recede from the point of view. Fig. 1 of diagram "P" represents a building viewed from point P and A, B, C, D, a plane parallel to front of building; and fig. 2 is a perspective outline of building, formed by connecting the point where lines from building to point of view P cut the plane A, B, C, D. If this plane were placed as far beyond the point P as it is in front of it, the outline of fig. 2 would still be the same, only reversed. This last is the condition of a camera with lens at point P, and ground-glass occupying a position of plane A, B, C, D. The perspective just described is not the perspective as it would appear to the eye, if observing the building from the point of P.

The part of the eye upon which the image is projected is not a plane but a curved surface, every part of which is at an equal distance from the centre of the lens of the eye. Therefore to the eye, *all* parallel lines appeared to converge as they recede from the eye. But pictorial representation based upon these last conditions is not so pleasing to the eye as the conventional perspective. If the plane A, B, C, D, were taken at an equal distance behind the point P, the diverging

lines from P would tract the same image as before upon the plane. The parallelism of the vertical lines of image being dependent upon the plane being placed vertical, or parallel with the vertical front of building; this will appear more clearly further on.



Referring to sheet "A," Fig. 1 is a representation of a side or edge view of a building f'–f–f''; with a camera placed with lens at L, and ground-glass (*g.g.*) at G–G, and (when used) swing-back (*s.b.*) in position S–B. The lens L is so directed that its optical axis is in line so marked, and cutting building at f. Three other points f', f''' and f'' in each edge of building, are considered (both edges being in line only one edge shows). The lens is focused on point f, so $f.o.$ is the focus of that point. The focus of point f' is at $o.f.'$, due to the distance L. M. The focus of point f'' is at $f.''o.$, due to distance L. N. When camera is tilted, without using swing back, the ground-glass will be in position G–G; and when back is swung to a vertical position (or parallel with front of building), the ground-glass will be in position S–B. It will be seen that the points of foci f, f', etc., correspond much more nearly with G–G than with S–B; thus showing that a rigid back is preferable to a swing-back, so far as focus is concerned. But the form of the image is as important a consideration as the focus; and an inspection of Figs. 2, 3 and 4 shows that herein the swing-back gives the best results.

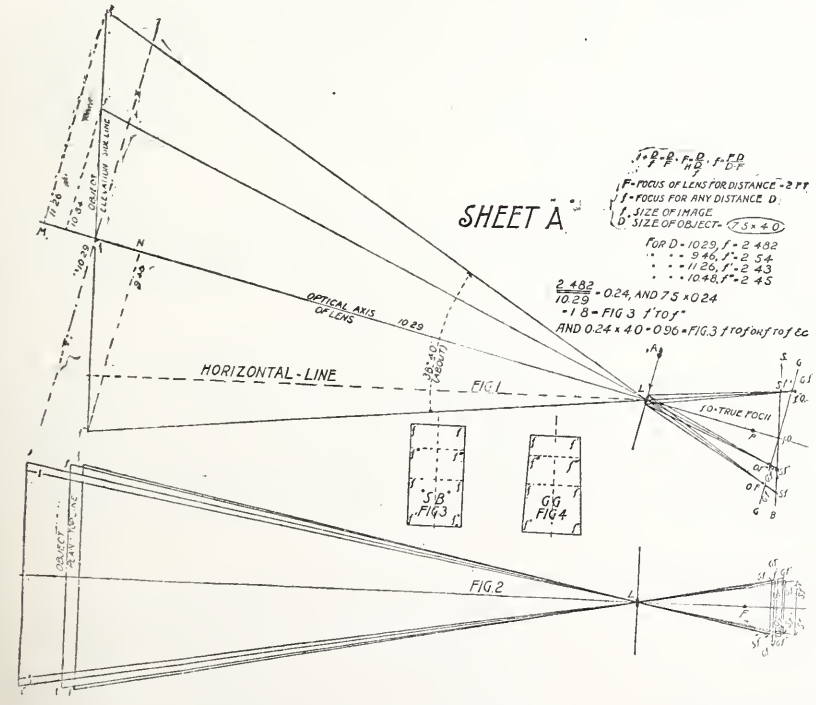


Fig. 2 shows the lines of Fig. 1, as viewed from above, or at right angles to each of the lines of Fig. 1. In Fig. 1 the point sf'', Gf'', etc., each represent two points (for each vertical side of the building), and in Fig. 2 the distance apart of these points is shown by the lines sf''–sf'', etc. So from these Figs. 1 and 2, we are able to construct the diagrams S″B″, Fig. 3, and GG, Fig. 4, Fig. 4 being the image of the building as projected upon the ground-glass when rigid, and Fig. 3 the image when the ground-glass is swung to a vertical position. Fig. 3 is a correct rectilinear representation of building, while Fig. 4 shows the vertical sides of building, as converging at the top. Fig. 3 will not be in as good focus as Fig. 4, but that is a fault which can be remedied by using a sufficiently small diaphragm. In all cases where the camera is tipped to any considerable degree, and swing-back used, a small diaphragm must be used, without regard to the conditions of light.

Fig. 2 may be assumed as a vertical view of the side f–f of a building; and Fig. 1 as a horizontal view; thus illustrating the conditions and effect of swinging the camera sidewise; and which are evidently of the same nature as before. It is thus unnecessary to represent the double swing which would make a quite complicated diagram.

C. W. Grant.

SILVER WASTE, TO RECOVER FROM PHOTOGRAPHERS' WASTE BATH.

THE following processes are taken from the *Scientific American* "Cyclopædia of Recipes":

(1.) Add solution of caustic potash or lime, as long as there is a brown precipitate. Allow it to settle, pour off the liquid and collect silver oxide for reduction; *vide* III. below.

(2.) For 1 pound of silver add 1 ounce sulphuric acid and ½ pound zinc, and allow it to stand two days. Precipitate as a chloride, wash eight or ten times by decantation, and dissolve gradually in nitric acid. Test the complete washing by hydrochloric acid. Wash with water till zinc nitrate is removed. If zinc clings to silver, wash with hydrochloric acid.

(3.) Suspend a sheet of copper in bath for two or three days.

(4.) Acidify with nitric acid, precipitate as silver chloride by sodium chloride or hydrochloric acid, and reduce as III.

(5.) Immerse in bath two strips of copper attached to a Daniell's battery. Silver deposited on the copper as in No. 3.

(6.) Add sodium carbonate or hydrate. Reduce as in III. below, or, if pure enough, dissolve the precipitate at once in nitric acid.

(7.) Concentrate bath made alkaline by sodium carbonate and add aqueous solution of oxalic acid neutralized with sodium carbonate. Filter, dry and fuse with equal weight of sodium carbonate.

(8) Deposit either with or without a battery on iron. Fuse with potassium nitrate and sodium carbonate.

II. *Hyposulphite Bath.*—(1.) Precipitate as silver sulphide by potassium sulphide. Reduce as III., or dissolve in nitric acid.

(2.) Precipitate with hydrosulphuric acid and reduce as III.

(3.) Decompose the hyposulphite by waste nitrosulphuric acid from manufacture of gun-cotton for collodion. Have silver sulphide and sulphur with sodium nitrate and sulphate in solution. Suspend zinc in the solution, then boil two or three hours; wash and filter, dry, fuse with borax and sodium carbonate.

(4.) Suspend sheet copper in the solution.

(5.) Add hydrochloric acid, which sets free sulphur and precipitates silver chloride. Oxidize the sulphur by aqua regia and reduce silver chloride as in III.

(6.) Add sodium hypochlorite to the alkaline solution. Wash, precipitate and fuse with mixed carbonates. This gives no fumes of sulphur. Sodium bisulphite and chlorides are by-products.

III. *Reduction of Silver Chloride, Oxide or Sulphide.*—(1.) Mix with one-third its weight of colophony. Heat moderately in a crucible till greenish-blue flame ceases, then suddenly increase the heat, when a button of the metal is obtained.

(2.) Melt with alkaline carbonates enough to cover surface from air; then mix with 75 per cent. chalk and 4 per cent. charcoal and heat.

(3.) Ignite with nitre on red-hot plate, carefully, and in small quantities to avoid explosions, run down to a bead with sodium carbonate and borax.

(4.) If a chloride, reduce to an oxide by boiling with strong potash, then reduce by glucose, or boil the chloride with glucose and sodium carbonate.

(5.) Add silver chloride dissolved in ammonia to a boiling solution of 1 part glucose and 3 parts sodium carbonate in 40 per cent. of water, keeping up the boiling all the time.

(6.) Add to silver chloride sodium hydrate in solution and grape sugar, and expose to sunlight in an open dish with occasional stirring. Reduce to dark-brown oxide of silver soluble in nitric acid.

(7.) Mix with five times its weight in sodium carbonate. Fill a Hessian crucible half full and sprinkle sodium chloride over the top. Heat slowly in anthracite fire. After half an hour increase the heat until the crucible is white hot. When complete fushion has taken place, allow to cool and break out the button of silver.

(8.) Fuse with 2 parts carbonate sodium and potassium mixed.

(9.) Add pure zinc and dilute sulphuric acid and let it stand two days. Wash silver off with water acidulated with sulphuric acid and remove all zinc; finally fuse to a button.

(10.) Mix one-half its weight sodium carbonate and one-quarter its weight of dry clean sand and ignite.

Notes and News.

Mr. C. W. Canfield has written the article on "Photography" for Garretson Cox & Co.'s annual Cyclopedia.

Now is the time for snow scenes. But remember to give full exposure, and develop slowly to avoid a tendency to harshness.

The annual auction sale of the Society of Amateur Photographers of New York will occur Thursday evening, February 9th, at 8 o'clock, at the Society's rooms.

Amidol is becoming very popular with amateurs for lantern slides, especially on account of the extremely fine color which it gives the positive.

The fifth annual Club Exhibition of work of the members of the Boston Camera Club was opened to the public at the club rooms, 50 Bromfield Street, from Tuesday, Jan. 3d, to Saturday, Jan. 14th.

Miss Catherine Weed Barnes gave an account of her visit to Southern England during the summer of 1892, at the meeting of the Photographical Section of the American Institute, Tuesday evening, January 3d. Her talk was illustrated.

"The Chemistry of Photography." The impatiently awaited "Chemistry of Photography," by W. Jerome Harrison, has made its appearance. It justifies all the impatience with which its appearance has been awaited and will fulfill all expectations.

The sixth annual joint exhibition by the leading Amateur Societies of Philadelphia, New York and Boston, open to all photographers of the world, will be held under the auspices of The Photographic Society of Philadelphia, April 17th to 29th, at the galleries of the Penn. Gallery of Fine Arts, Philadelphia.

HE PRESSED THE BUTTON,

EXPLORER PEARY KODAKS THE WONDERS OF GREENLAND.

Not the least among the achievements of Lieutenant Peary of Arctic fame were his successes in photography. The importance of the camera in topographical and geographical surveys has for some time been recognized, and Ray, Gilder and Schwatka are among those who have used it to advantage in their work of exploration, but it remained for Lieutenant Peary and a Rochester instrument—the Kodak—to give this branch of scientific work the importance it deserves.

Although a mere novice in photography and entirely un-

acquainted with the Kodak, Lieutenant Peary "pressed the button" so frequently and so judiciously as to secure a photographic record of his expedition that is without comparison in the annals of exploration. The scientific world has become deeply interested in this branch of the work and it is safe to prophecy that in the future the Kodak will play an important part in research and investigations of this character. The Philadelphia correspondent of *The New York Sun*, in speaking of the plucky explorer's success in this branch of the work, says in part:

Lieutenant Peary brought home with him 2300 negatives, which he has now developed with the most gratifying results. The fact that over 2000 of the negatives have produced photographs of superior excellence speaks highly for the good quality of his instrument and for the labor and pains Peary bestowed upon this important feature of his work. It is certain that the pictorial results of no previous Arctic expedition compare with those Peary has achieved. Scientific men who have seen his ethnological pictures say that no earlier explorer ever obtained so fine a series of any native tribe in any part of the world.

He photographed the greater part of the Arctic Highlanders, the isolated tribe of Eskimos who live nearer the northern apex of the world than any of the human beings. He took their pictures in family groups and singly. Ethnologists will be particularly pleased with Peary's large series of photographs of nude subjects. Such pictures, if well taken, are invaluable in the scientific study of new peoples. It is certain that Peary has met with extraordinary success wirh these photographs. They are so clear and definite in all details that in many cases even every marking in the palms of the hands may be distinctly traced. The nude pictures were taken by flash-light, and so were many of the others.

Lieut. Peary made a very large series of pictures along his 1300-mile sledge journey to the northeast coast of Greenland. His sledge is seen under all conditions of locomotion. In some pictures the dogs are tugging away at the drag rope. In others two sails well puffed out by the stiff breeze, are supplying a large part of the motive power. Then there are interesting camping scenes and a lot of graphic pictures showing the rough country barren of ice, where Peary reached the northeast coast.

Lieut. Peary is very enthusiastic over the photographic successes of his trip, and is already planning a Kodak outfit for his next expedition to the land of the Aurora Borealis. In a letter to Mr. W. P. Buchanan, of Philadelphia, under date of December 16th, he says:

"I regard the Kodak as responsible for my having obtained a series of pictures of Arctic life and surroundings which in quality and quantity exceed any that have been brought back from Greenland and the Smith Sound region."—*Rochester Democrat.*

Photographic Societies.

THE SIXTH ANNUAL JOINT EXHIBITION.

The sixth annual exhibition under agreement between The Photographic Society of Philadelphia, The Society of Amateur Photographers of New York, and The Boston Camera Club, open to all photographers of the world, will be held by The Photographic Society of Philadelphia, April 17 to 29, 1893, at the galleries of the Pennsylvania Academy of the Fine Arts, Broad and Cherry Streets, Philadelphia.

The Exhibition Committee is as follows: Robert S. Redfield, Chairman; John G. Bullock, Charles R. Pancoast, Charles L. Mitchell, M.D., Edmund Stirling.

AGREEMENT.

Under an agreement made in October, 1890, between The Photographic Society of Philadelphia, The Society of Amateur Photographers of New York and The Boston Camera Club, each organization holds a public exhibition of photographs, open to all photographers of the world, every third year.

These exhibitions are held annually in rotation in each of the three cities; each exhibition being under the entire control and management of the society holding the same and under such rules as it may adopt.

Each society agrees that it will not hold any public and open competitive exhibition except in its regular turn, without the consent of the other two societies. Neither organization assumes any responsibility in regard to any exhibition except its own.

CONDITIONS.

AWARDS.

1. The silver medal of The Photographic Society of Philadelphia will be awarded by a Board of Judges, for artistic, technical or scientific excellence.

2. The Judges will give preference, other things being equal, to pictures in which both the negative and print are the personal work of the exhibitor. All photographers are invited to compete.

3. In making their selections, the Judges will endeavor to give due recognition to work in any of the various branches or processes of photography which may show unusual merit, obtaining if necessary the aid of special experts in any particular line.

4. The Judges shall specify the particular pictures for which awards are made, not exceeding three by any one exhibitor, except that in the case of lantern slides, the awards shall be for sets of six slides each.

5. The decision of the Board of Judges shall be final.

JUDGES.

6. The Board of Judges will be selected to consist of three artists of acknowledged ability, at least one of whom shall be well versed in practical photography, and two expert practical photographers.

7. The members of the Board of Judges shall not compete for awards, nor be connected in any way with the management of the exhibition.

REJECTION.

8. The Committee reserve the right to reject the whole or portions of any exhibit offered.

RESPONSIBILITY.

9. The Committee will not be responsible for any loss or damage to exhibits in its charge, but will use all reasonable care to prevent such occurrence; and at the close of the exhibition will re-pack each exhibit and ship as directed by the exhibitor.

RULES.

PICTURES ELIGIBLE.

1. No picture which has once been exhibited in open competiton at a public exhibition held in Philadelphia, in the annual series under this agreement, shall be admitted for competition.

FOR EXHIBITION ONLY.

2. No picture will be received "for exhibition only" unless by special consent of the Committee.

PREVIOUS PRIZES.

3. No pictures which have taken prizes elsewhere shall be so designated until after the awards have been announced

FRAMING AND MOUNTING.

4. All pictures, except those from foreign exhibitors, must be framed (with or without glass). Pictures from foreign exhibitors, sent by mail, should be unmounted. They will be suitably mounted by the Committee, free of charge.

ENTRY FORMS.

5. Entries of all exhibits must be made in duplicate on forms issued by the Committee.

LABELLING.

6. The exhibitor's name and address, also a number corresponding to the descriptive number upon the entry form must be clearly written on the labels provided, which must be attached to the back of each frame by the exhibitor.

When two or more prints are mounted in one frame, a designating letter must be placed under the centre of each print, and all letters so placed must appear in the entry form opposite title of the respective pictures.

Nothing else may appear in front of frame except title of picture and exhibitor's name. Any descriptive matter of special interest should be given on entry form for use in catalogue.

WALL SPACE CHARGE.

7. A charge will be made for wall space at the rate of twenty-five cents per square foot (the minimum charge being one dollar) to all except members of The Photographic Society of Philadelphia, The Society of Amateur Photographers of New York, The Boston Camera Club, and foreign exhibitors.

The amount of charge for wall space must be enclosed with entry form to the Committee.

If any of the pictures entered are not hung, a due proportion of the charges will be returned.

A commission of ten per cent. on all sales will be retained.

LANTERN SLIDES.

8. Lantern slides must not exceed 3¼ inches in height. They will only be eligible for competition and award when both negatives and slides are the personal work of the exhibitor.

Not less than six slides should be sent by any one exhibitor for competition. When more than one set of six slides are entered for competition, the exhibitor must distinctly designate on the entry form the slides constituting each set.

Arrangements will be made for the proper exhibition of lantern slides on the screen.

DELIVERY.

9. All pictures must be sent at owner's risk, carriage prepaid, and delivered to the Committee as hereinafter directed. Return charges must be collected by carrier.

ADVERTISING.

10. Advertising in any form in connection with an exhibit is strictly prohibited.

WITHDRAWAL.

11. No picture may be withdrawn before the close of the exhibition.

RECEPTION OF EXHIBITS.

Pictures from American exhibitors must be sent, charges prepaid, addressed to: The Photographic Society of Philadelphia, care of the Pennsylvania Academy of the Fine Arts, Broad and Cherry Streets, Philadelphia, Pa., and delivered before 9 P.M., Monday, April 3, 1893.

Pictures from Foreign Exhibitors should be sent unframed, as below:

Those from Great Britain and Ireland should be delivered, carriage prepaid, to care of the editor *The Practical Photographer*, Memorial Hall, London, E. C., marked: "For the Photographic Society of Philadelphia," not later than March 1, 1893.

Those from other foreign countries should be sent by mail and unmounted, addressed to Robert S. Redfield, Chairman Exhibition Committee, The Photographic Society of Philadelphia, 1601 Callowhill Street, Philadelphia. Pa., U. S. A., to arrive not later than March 15, 1893.

Pictures not received by dates specified above will be liable to exclusion from the catalogue and from competition.

ENTRY FORMS, ETC.

Blank Entry Forms may be obtained from the Committee on application. They must be filled out by the exhibitor in duplicate and sent to the Chairman of the Exhibition Committee on or before March 25, 1893.

Blank Labels, to be attached to back of frames by exhibitor, will be furnished on application.

CATALOGUES.

A finely illustrated catalogue will be published, which will be sent to all exhibitors. Copies will be on sale at the galleries during the exhibition, at twenty-five cents each.

The Exhibition will be open day and evening, Sundays excepted, and several evenings will be devoted to displays of Lantern Slides in the Lecture Hall of the Academy.

The names of the Judges and further details will be announced hereafter.

CORRESPONDENCE.

All correspondence respecting the exhibition should be addressed to

Robert S. Redfield,
Chairman Exhibition Committee,
1601 *Callowhill Street, Philadelphia, Pa.*

December 15, 1892.

The Editorial Table.

The Chemistry of Photography, by W. Jerome Harrison. New York: The Scovill & Adams Company.

This important work by Professor Harrison is at last ready for the photograghер. It is a large book, containing over four hundred (400) pages of most instructive matter amply illustrated by cuts, etc. It has been awaited with impatience by many photographers.

The readers of THE PHOTOGRAPHIC TIMES are familiar with many of the earlier chapters of this book, as they were originally printed in these columns under the same general title; but in completing the work Professor Harrison has added a number of chapters of entirely new matter. He has also given the book a valuable index, which will be found a great convenience in referring. Altogether it makes one of the most important volumes yet issued in the Scovill Photographic Series, of which it is No. 41, which is the same as saying that it is one of the most important works ever issued on a photographic subject. We cannot see how a practical photographer can well dispense with this book, and we have no doubt that it will soon be in the hands of all reading photographers.

The advertisement on another page gives the full table of contents, so that we need not repeat it here. The book is substantially bound in cloth, uniform with the other numbers of the Scovill Series, and is printed on good paper in large, clear type.

We shall have more to say of this book in future issues of the magazine.

My Three-Legged Story Teller, by Adelaide Skeel. Philadelphia: Rufus C. Hartranft.

We welcome this collection of Miss Skeel's bright sketches and breezy photographic stories. Their reappearance in book form seems to enhance their value, and we scarcely recognize the old friends whose acquaintance we first made in our own modest columns, in the elegant broad-margined pages and pure white covers in which they now return to us. The illustrations are all here, both those from Miss Skeel's own negatives in half-tone, and the outline sketches from her suggestive blue prints. The book is one which every amateur photographer will want to own. It is pervaded by the spirit of photography from the dedication "to the shadowed poacher," through the preface and the entire collection of stories to the rear cover. But it appeals to a much larger audience than merely a photographic one, as the stories are in themselves so interesting that any one will enjoy them whether a photographer or not.

The book opens with a "Christmas Card," which first appeared in the holiday number of THE PHOTOGRAPHIC TIMES of 1891, and continues with Christmas developments, a Saint Cross detective story, a Latent Image and Mrs. Santa Claus, for the most part Christmas stories. A Sea Change, The Lady of Shalott's Negatives, On a Film, Mascott, England through an American Lens, Without his Camera, A Photographic Correspondence, The Solution, The Impossible She, (a composite story), the Midsummer Flash, Out of Focus, A Copyrighted Shadow, (a story of Chautauquan Student No. 461), Historic Homes, and Photographing Yesterday, most of which, as has been said, originally appeared in THE PHOTOGRAPHIC TIMES.

The collection makes a book of over 200 pages, tastefully printed on heavy paper with broad margins, and un-cut leaves. It will probably be offered for sale by the various dealers in photographic supplies, as well as the book-dealers.

The Land of the Cliff-Dwellers. By Frederick H. Chapin. Boston: W. B. Clark & Co.

In our Holiday Number we gave a preliminary notice of this beautiful book by Mr. Chapin, who will be remembered by our readers as a contributor of several interesting articles to the magazine as well as a number of illustrations of the highest order of merit. Indeed, this book contains as a frontispiece the Cliff Palace which was reproduced in THE PHOTOGRAPHIC TIMES several months ago. "In a Colorado Cañon," which also embellished these columns, appears in this book in a well-rendered phototype. Other illustrations in phototype are:

The Cliff Cañon; Ute Indians; Patosi Peak; Mount Snaefell; Mesa Verde, from Mancos; Ute, "Wickyups"; Sandall Cliff-House; Cliff-Palace; Loop-Hole Fort; Mesa Verde; and there are a great many excellent photo-engravings. All are from original negatives from nature, by Mr. Chapin, which show him to be a skilful photographer as well as a successful traveller.

The descriptive matter in the book is highly interesting and fully sustains the reputation established by the author's first work, entitled "Mountaineering in Colorado." It is a book photographers will be especially interested in. It can be obtained from the sales-agents of the Appalachian Mountain Club, of which Mr. Chapin is a prominent member; Messrs. W. B. Clarke & Co., 340 Washington Street, Boston.

The British Journal Photographic Almanac for 1893, edited by J. Traill Taylor. London: Henry Greenwood & Co.

The 1893 volume of this well-known "Annual" makes its timely appearance. It is bulkier than ever, containing altogether not less than 1235 pages, of which, however, less than 300 pages are devoted to reading matter. The great bulk of the book consists in advertisements, and is therefore mainly a compendium of the various photographic goods manufactured and sold by English and other photographic merchants.

The frontispiece is a portrait of Miss Miss Violet Vanbrugh, as "Anne Bullen," and is printed in permanent ink by Morgan & Kidd's improved collotype process on a quick running steam power press. It has the necessary defects of all such quickly printed pictures, though the negative by Alfred Ellis is an excellent one. The book contains two or three other illustrations from half-tone blocks which present rather a better appearance, and there are several illustrations throughout the advertising pages shown as specimens of quick work with various shutters, lenses, etc. The price of the book remains the same, 50 cts., in paper covers, and may be obtained of The Scovill & Adams Co.

The International Annual of Anthony's Photographic Bulletin for 1892. Edited by W. Jerome Harrison and Arthur H. Elliott. New York: E. & H. T. Anthony & Company.

Volume V. of this Annual comes to our table for review, and we are pleased to state that we think it an improve-

ment on the previous volumes. In size and appearance it is similar to the English Annuals, though it is much better printed than the British publications, and contains more illustrations. It includes a number of excellent half-tone reproductions from photographic negatives, and the usual number of contributed articles by professionals and amateurs on various subjects of more or less value to the practical photographer. Quite a number of the articles are written by English writers and are of interest only to English photographers. Many of the advertisements also are of English goods; but then it is an "International" Annual. The price is 75c. in paper covers; cloth bound, $1.25. Postage extra.

An advance copy of No. 1, Volume I, of the Journal of the Photographic Society of Philadelphia, to be "published monthly for distribution among the members of the Society," comes to our table dated January, 1893. It contains: "A word as to the Journal"; "Proceedings at the stated meeting of December 4th"; "A report of the Special Committee of Composite Heliochromy"; "The Sixth Annual Exhibition"; "The Enlarging and Reducing Cameras"; The Secretary's Corner."

It is a neatly printed eight page pamphlet which we wish all success.

From Harry Wiltshire, an engraver and printer at 120 Fulton Street, New York City, we have received a pretty calendar for 1893.

We have received with the compliments of Charles J. Mattison, a very pretty cat picture entitled "Jo." The photograph shows the cat perched in the crotch of the tree and is very well made.

New Year's Greeting.—We wish to express our appreciation of the very kindly New year's greetings which have come to us from C. T. Shape & Co., Northwestern Photographic Stock Depot at Milwaukee, Wis.

Buchanan's Complete Illustrated Catalogue of photographic supplies, manufactured, imported and sold by W. P. Buchanan, at 1226 Arch Street, Philadelphia, is a very complete work. It contains over two hundred (200) closely filled pages with more than five hundred (500) illustrations, and should be in the hands of every photographer, be he a professional or an amateur.

A SNAP SHOT.

My lens has caught a picture
  Of a bewitching face,
But the perverse negative
  Denies its winsome grace.

Upon the false presentment
  I gaze in sheer surprise;
The face is surely hers,
  What other has such eyes?

Yet despite the likeness
  Her chiefest charm is gone—
Lost in noonday brightness—
  The sweetness of the morn!

Oh, how could glass and paper
  Her mystic charm reveal?
To do such beauty justice
  The plate must learn to *feel!*

THE SNAPPER.

REPUTATION READY-MADE.

"Busy photographers are nearly always on their feet, are they not?"

"What of it?"

"Why, then they're bound to be men of most excellent standing!"

Queries and Answers.

6 BEGINNER.—What is the use of the diaphragm in a portrait or group lens?

6 *Answer.*—The function of a central stop in a combined lens, is not to give central sharpness, this being obtained without any such appliance, but to extend that sharpness up to the end of the plate, and also to cause objects, which are situated at varying distances, to be equally sharp. If the photograph be that of a group, and the lens be used without diaphragm, then will one individual person be sharp, while another a little farther away or nearer, will be out of focus. A small diaphragm inserted, all the objects although on different planes, will become sharp immediately. This effect is obtained at expense of rapidity of action, for in proportion to the amount of light debarred from transmission, so must the chemical action be slower, or the less light is admitted, the longer is the time of exposure. How large or how small the diameter of the diaphragm to be employed, to produce desired effects, is to be, will be found by a few experimental tests.

7 LADY AMATEUR.—How can nitrate of silver stains be removed from engravings or prints?

7 *Answer.*—Soak the print in water, touch the stains with a solution of iodine in iodide of potassium solution, pass it through a 5 per cent. solution of cyanide of potassium, and repeat if necessary. Finally wash copiously in water, size the print with weak gelatine solution, dry and pass through the press, when the print will look good as new.

8 PRINTER.—When ferrous sulphate is added to an old gold toning bath, what does the precipitate formed consist of?

8 *Answer.*—Partly of pure metallic gold and partly of hydrated oxide of iron. To remove the iron, bail the bulk in diluted hydrochloric acid, by which operation the iron will be formed into a soluble chloride, and a sediment of pure gold will remain. This, after being thoroughly washed can be at once dissolved in aqua regia, and the solution be evaporated to dryness. The result is pure trichloride of gold.

9 PHOTO ARTIST.—Has built a new studio and wants to know (1) what color to paint walls, window sashes, etc.

2. What material to use for a foreground.

9 *Answer.*—1. A light, neutral gray. The so-called Scotch gray, which has a little umber admixed will do very well.

2. A plain ingrain or Brussels carpet will do. If of light color, any kind of accessory, either for out or indoor scenes contrasts well with it. It has been suggested to dispense with any covering, and paint the floor with any desirable color, but the parallel deals will interfere with the effect in almost every case.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W I LINCOLN ADAMS, Editor.

SUBSCRIPTION RATES.

Weekly (illustrated) for one year $5 00
" " " six months 2 50
" " three month's trial 1 00
Single copy, 15 cents.
On Foreign Subscriptions $1 00 is added to pay postage.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Subscriptions to THE PHOTOGRAPHIC TIMES received by all dealers in photographic materials in this and foreign countries, also by the American News Co. and all its branches.
With *Sun and Shade* (regular subscription price, $4) 7 50

ADVERTISING RATES.

Size of advertising pages, 6¼x9¼ inches; outside size, 8½x11½ inches.
One page, each insertion $25 00
Half page, per insertion 15 00
Quarter page, per insertion 8 00
Eighth " " " 5 00
Business Notices, not displayed, per line 25
Discount for term contracts.

Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

IT IS A GIFT.

Publishers of *The Photographic Times* "Annual."

Gentlemen: I find that the introduction of this year's "Annual" says that it is *presented* to the photographic fraternity. That is my idea exactly, and I thank you for my copy.

You doubtless see your way clear in a money way, which is only a just reward of far-seeing enterprise, but to the photographer it is certainly a gift, as the price charged is not worth taking into account.

Respectfully,
Ottomar Jarecki

ERIE, PA., December 31, 1892.

THE CHRISTMAS NUMBER.

"I wish to compliment you on the Christmas Number of THE TIMES."—DALLET FUGUET.

The Christmas Number is a very valuable and exceedingly pleasing number.—S. R. STODDARD, Glens Falls, N. Y.

THE BRADFISCH PERFECTED PAPER.

Messrs. Bradfisch & Pierce have sent us some more samples of portraiture made on the Bradfisch & Pierce perfected aristotype paper. They are even better than those which we noticed in these columns a few weeks ago, which shows that the manufacturers are constantly improving their paper. "I find it by far the best of any aristotype paper I have ever tried," writes Mr. W. R. Steele, of Ansonia, Conn., in regard to this paper. And another, Mr. G. W. Tull, the professional of Kirksville, Mo. writes: "The paper I have received from you is the finest I ever used. I think it is the best of any printing-out paper on the market. The results are soft and brilliant, and it is very simple and easily worked. I am using no other paper at present, and will not so long as you make and keep up the paper to its present standard of excellence."

"I like the box (Henry Clay) so much that I am arranging to fit a whole battery of both stereo and single lenses to it—seven sets in all."—MORRIS F. TYLER, New Haven, Conn.

STILL MORE WORDS OF PRAISE FOR "THE ANNUAL."

"Beautiful and Valuable as always."—MISS ADELAIDE SKEEL.

"It is bigger, more beautiful and better than ever."—W. N. JENNINGS.

"A truly valuable work, complete in every point."—J. R. SMITH, Howard, R. I.

"Shall find it both instructive and interesting."—MISS LUCY B. SALTER, Boston, Mass.

"Perfection is the only word that expresses its qualities."—J. R. SWAIN, Dana, Ind.

As usual it is full of good things and handsomely illustrated by various processes.—*The Eye.*

"I think it is the best Annual that has ever been issued."—R. W. HARRISON, Sioux City, Iowa.

"As full of good things as its highly instructive predecessors."—J. WILL BARBOUR, Chambersburgh, Pa.

This most excellent book every year seems to improve.—MISS MARY S. TURNER, Cambridge, Mass.

"It is a valuable addition to our library, and those who buy it will get full, very full value for their money."—*The Beacon.*

"We think the Almanac very good this year, and have sold quite a number."—K. A. & M. S. HALLOCK, Evansville, Ind.

"It is very handsomely gotten up and will be a great addition to my table and photographic library.—EDW. H. GRAVES.

"Every year it is better than the preceding, and it seemed as though it must retrograde sometime. But it has not, and I do not believe it ever will."—E. B. LUCE, Worcester, Mass.

Georgetown. Ky., Dec. 23, 1892.

Dear Sir:

Please send me a catalogue and description of the Henry Clay Camera. I have been doing something with photography for ten years or more, and have owned a number of cameras. Very recently a student of mine brought to me the above instrument of yours, and I am charmed with it. It is by far the most complete and convenient instrument I have ever used.

J. F. EASTWOOD, Ph.D.,
Prof. Chem. and Physics,
Georgetown College.

TRY DR. ANDRESEN'S AMIDOL DEVELOPER.

Business Notices.

PHOTOGRAPHERS, see advertisement of Woolford & Sinn, page viii., in regard to albumen enlargements, and double your business.

"THE DEVELOPER OF THE FUTURE."—S. P. C. Amido Developer in solution ready for use. 8-ounce bottle, with directions, 50 cents.
THE SCOVILL & ADAMS CO.

WANTED.—Volume 13 of THE PHOTOGRAPHIC TIMES. Address, with price, OTTOMAR JARECKI,
Erie, Pa.

AN 1889 American Annual of Photography, in paper cover, in perfect condition, for sale. Price $1. Address "ANNUAL," care THE PHOTOGRAPHIC TIMES Office.

"COLD BATH" PLATINOTYPE.—Superb effects in landscape! Very easy for amateurs to work! Send for circulars. WILLIS & CLEMENTS,
39 South 10th St., Philadelphia.

BEST EFFECTS CAN BE HAD on the New Eagle Dry Plates. For sale by
THE SCOVILL & ADAMS CO.

PHOTOGRAPHIC BROKERAGE.—Established especially to furnish carefully selected outfits of any make or grade to those living at a distance. Address
C. M. BROCKWAY, 33 Worth St., New York.

GRAND OPPORTUNITY.—For rent from April 1st, the most central and oldest photo gallery—newly remodeled—in the growing, pushing, "electric city" of Scranton, Pa. Address for terms
F. E. NETTLETON, Scranton, Pa.

WANTED.—THE PHOTOGRAPHIC TIMES of September 4, 1891, (No. 520). HERBERT F. SMITH, Secretary Syracuse Camera Club. 322 South Salina Street, Syracuse, N. Y.

WANTED.—A 5 x 8 or 8 x 10 Levy's Screen Plate, 132 lines to inch, crossed; also a 2¼ inch or 3¾ inch prism. Must be perfect; state lowest cash price.
"HALF-TONE," care PHOTO TIMES Office.

FOR SALE.—The leading photo gallery in a good town of 5,000; work up to 14 x 17; one competitor, poor workman. Address Box 477, Athens, O.

FOR SALE.—First-class gallery, fitted to 11 x 14, in live college city of 18,000. C. A. SMITH,
241 Main St., Northampton, Mass.

A RARE CHANCE.—Any first-class photographer desiring a location for a gallery, can learn of a good opening by addressing G. O. SHIELDS,
Eddy, New Mexico.

FOR SALE.—The Photographic Stock business, formerly owned by E. J. Partridge. This is a good business in a good locality for any one wishing to establish themselves permanently. For full particulars apply to
GEO. M. WEISTER, Administrator.

OLD ESTABLISHED PHOTO STUDIO FOR SALE.—Location fine; rare chance.
M., PHOTOGRAPHIC TIMES Office.

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In all various processes done at moderate prices. Also retouching for the Trade and Amateurs. First-class work guaranteed.
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METHOL.—Another new developing agent, especially adapted for Bromide of Silver Paper, and the developing of reproductions in line work. Put up in one-half ounce bottles.
THE SCOVILL & ADAMS COMPANY.

FOR SALE AT A BARGAIN.—The leading gallery of Steubenville, Ohio. Address A. S. HARRY,
405 & 407 Market St., Steubenville, Ohio.

FOR SALE.—Pair Stereo. Lenses, imitation Dallmeyer, price $12; one 10-inch Entrekin Oscillating Enameler, price $12. All the articles here offered are in perfect order. Address T. W. ROGERS,
Carmichaels, Pa.

TRY IT!—"The Developer of the Future," Dr. Andresen's Amido. In solution, ready for use, 50 cents per 8-ounce bottle, with full directions. Dr. Andresen's Pure Amido in 1-ounce bottles, 75 cents per bottle.
THE SCOVILL & ADAMS CO.

PERFECTED BRADFISCH Aristotype Paper leads the world! It does not stick, nor does the surface of the print rub off.

THE UNDERSIGNED has a few 6x5 Dallmeyer Rapid Rectilinear Lenses which he will sell for 20 per cent from list prices. These lenses are a late importation and are all warranted. Address "TOURIST,"
care The Scovill & Adams Co.

THE FINEST Platinotype Solar Enlargements and contact prints, in black and sepia, are made by
THE PLATINOTYPE CO.,
39 South 10th St., Philadelphia.
Send for price lists.

FOR SALE.—A first-class photograph gallery doing a nice business; has the largest and best location in the city. For particulars call or address
J. NEUMANN, 403 Main St., Buffalo, N. Y.

A GENUINE BARGAIN.—Bound volumes of the *Philadelphia Photographer* for 1885 and 1889, each year complete in one volume and bound in full morocco leather. Original cost, $7 each. Will sell for $3 per volume. Sent to any address by express on receipt of the amount. *Anthony's Bulletin* for 1886 and 1889, bound in red cloth, uniform with the publisher's binding, each year complete in the one volume with all the illustrations. Cost $6 per volume. Will sell for $2 each. Address
BOUND VOLUME,
Care of THE PHOTOGRAPHIC TIMES.

PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never lose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
C. M. DARLING, 122 West 36th St.

LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

A BARGAIN.—No. 1 Kodak, complete and unbroken seal; price $15; cost $25. Address
LEFFERTS, care PHOTO TIMES Office.

NOW READY.

MORAN'S BARGAIN LIST No. 39.

It will pay you to send for it before ordering any goods in the photo line.
R. H. MORAN,
396 Broome Street, New York.

S. P. C. AMIDOL DEVELOPER IS THE LATEST.

The Chautauqua School of Photography

The Chemistry of Photography,

By W. Jerome Harrison,

has just been published by The Scovill & Adams Company, price $3. It has been adopted as a text book in the advanced class. Students of the first term will read Chapters I. to IV., and Chapters XIV. to XXII. Intermediate chapters will serve as a reference or to give special information.

Examination questions will be submitted before May 1, and be answered before July 1, accompanied by three finished photographs. Successful candidates will be awarded a Blue or Golden Seal.

CHARLES EHRMANN,
Instructor C. S. P.

We offer the following stock of Eastman's Bromide Paper at the appended special prices for the next thirty days only, to reduce our stock preparatory to inventory:

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50 doz.	3	x	4	C,	Bromide	Paper at.....	$0 15
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THE SCOVILL & ADAMS CO.

The Albertype Company,

Photo Gelatine Printers,

67 & 69 Spring St., NEW YORK.

VIEWS made into Souvenirs, Portraits, and Groups from photographs or negatives.

Send for samples and edition prices.

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Quite a word—means that I am interested in the literature of photography.

My previous advertisements in The Times have sold for me all the duplicates I offered for sale; "turn about is fair play."

I WILL BUY

Photographic books and journals in limited quantities. Send a list of what you have to offer, and enclose return postage if you expect a reply.

Journals Wanted.

Times, early volumes.
Canadian Journal of Photography.
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American Journal, McCollin.
Humphrey's Journal.
Daguerrean Journal.
Photographic Art Journal.
Photographic and Fine Art Journal.
Beacon.
Eye.
St. Louis Practical.
St. Louis & Canadian.
Philadelphia Photographer.
Bulletin.
Mosaics, Annuals and *Year Books*.

C. W. CANFIELD.
1321 Broadway, New York

PORTE-FEUILLE CARDS.

The cards for these Albums may be quickly and securely attached to the guards after the prints are mounted and burnished.

Price-list, including 25 sheets of Collins' best quality White Cards:

No. 2, 10x12 for 6½x 8½ Photographs.....$2 00
" 3, 11x14 for 8 x10 " 2 25

Price-list, including 25 sheets of Collins' White Muslin-Back Cards:

No. 5, 10x12 for 6½x 8½ Photographs.. .....$2 00
" 6, 11x14 for 8 x10 " 2 25

THE SCOVILL & ADAMS CO.,
423 Broome Street, New York.

S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography; no other has attained to equally fine results.

THE SCOVILL & ADAMS CO.,
423 Broome Street, New York.

Employment Offered and Wanted.

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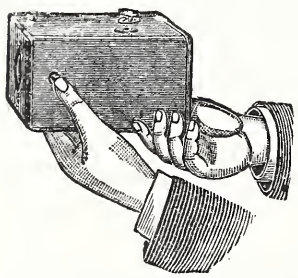
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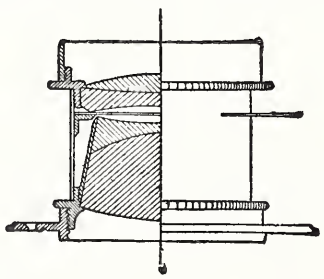
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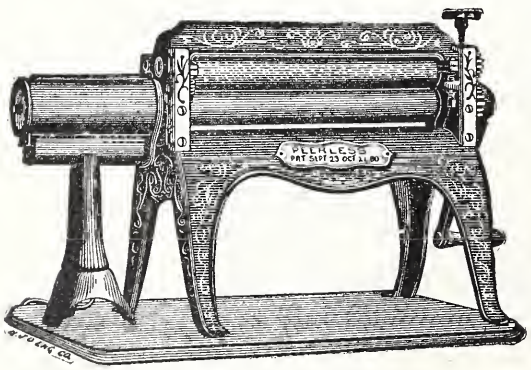
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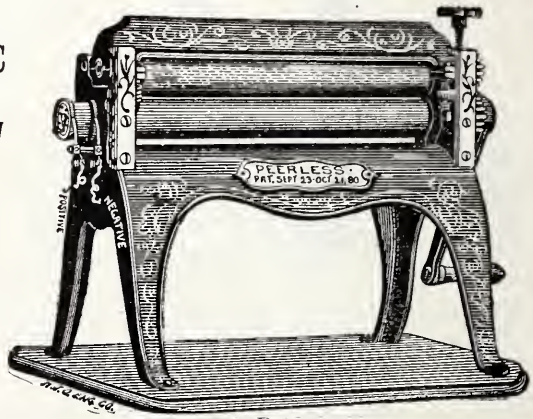
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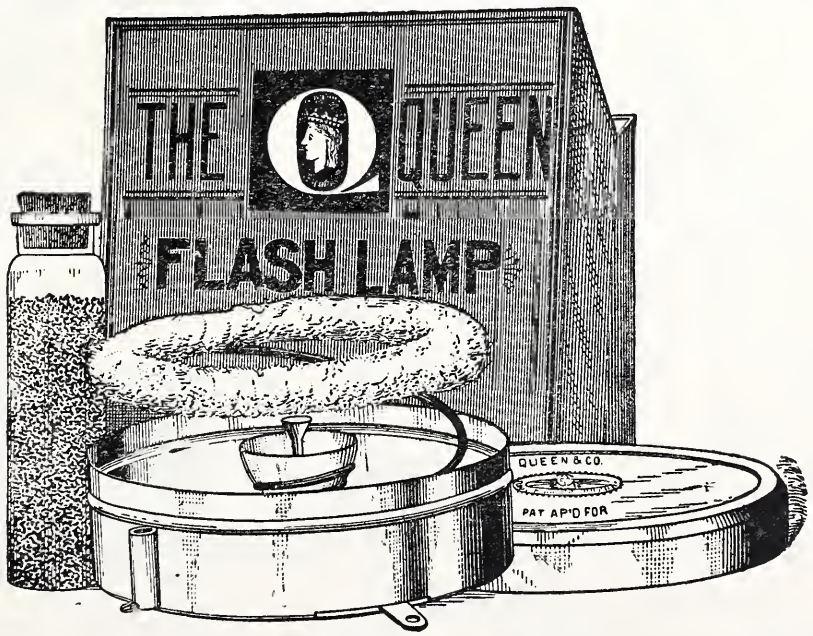
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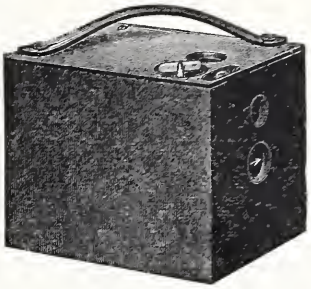
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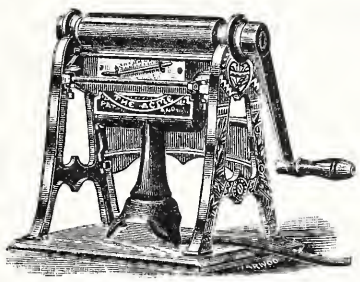
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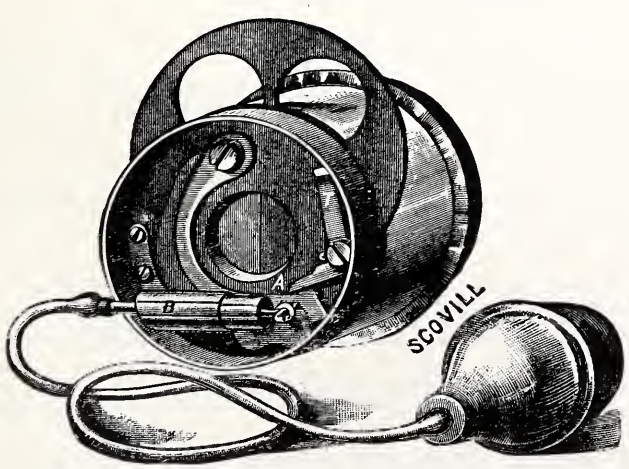
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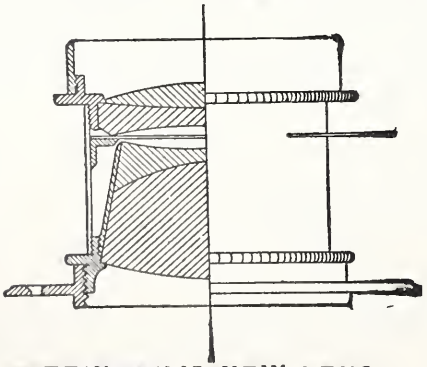
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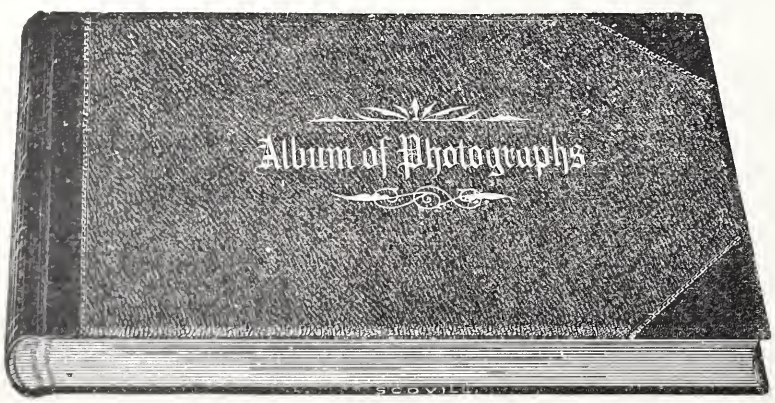
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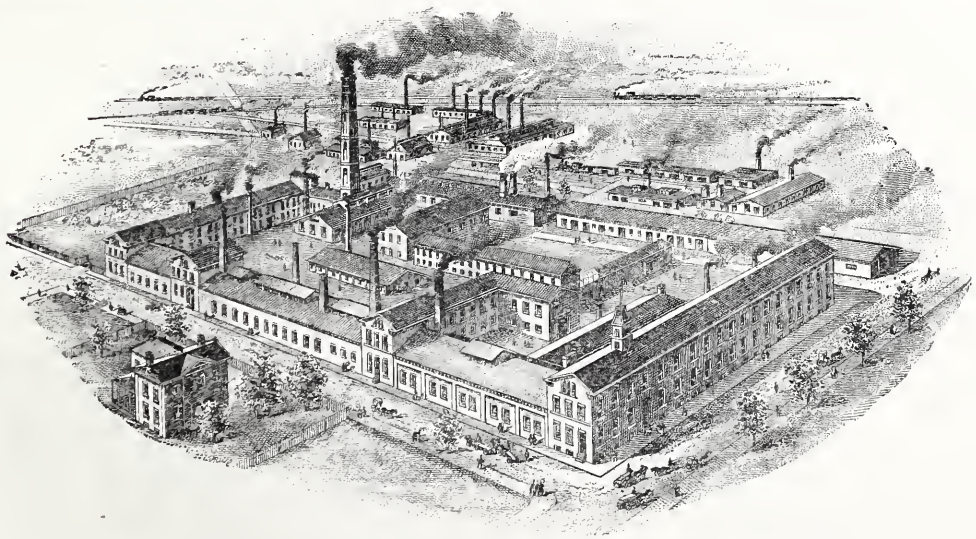
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(OVER.)



A. J. Swanson, Photo. The Albertype Co., New York.

SHEEP

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JANUARY 20, 1893. No. 592.

SHEEP.

Our pretty frontispiece is from a negative by Mr. A. J. Swanson an amateur photographer of Faribault, Minn. Mr. Swanson has not given us any particulars concerning his photograph, which is, of course, a "snap shot." The time was well chosen, and the development is good. The Albertype Company, who make the reproduction, are also entitled to credit for their share in producing this pleasing picture.

PRESERVE YOUR MAGAZINES.

With the beginning of a new year, our publishers invariably receive a large number of requests for back numbers of THE PHOTOGRAPHIC TIMES, which have been mislaid or lost during the year, and thus render the volume incomplete for binding. Many times the stock of the earlier numbers of the year are exhausted long before the volume is completed, so that it is impossible for our publishers to comply with these requests. For instance: all the numbers of January and most of the February numbers of 1892 are out of print so that those of our readers who have not preserved those numbers will be unable to complete their files for binding, unless they are enabled to obtain them in response to advertisements.

Our publishers very generously offer to advertise for such missing numbers for their subscribers without charge in order to facilitate the completing of such broken volumes. They have also ordered a number of handy binders for preserving the magazines during the year, and thus avoid such losses in future. This binder is fully described in the advertisement on the second page of cover, so that it is unnecessary to dwell upon it here. Suffice it to say that by the handy contrivance, loose copies of THE PHOTOGRAPHIC TIMES may be readily placed in it from week to week, as they are received from the publishers, and by means of the solid wooden back, the binder presents nearly as neat an appearence, when only partly filled, as when the volume is completed. Each binder holds the magazines for six months, and can be used repeatedly, so that one binder is all a subscriber really needs, though two, holding the magazine for the entire year, is a convenience as it makes unnecessary the removal of the periodicals when the six months is completed. They may be used as permanent binders for the magazine, if desired, though the publishers offer to exchange bound volumes of THE PHOTOGRAPHIC TIMES for loose copies when in good condition, charging merely the cost of binding, which is $1.00 when they are bound in one volume without advertisements; $2.00 when bound in two volumes with the advertisements.

THE PHOTOGRAPHIC TIMES with its fifty-two artistic frontispieces and numerous other full-page pictures, and its wealth of practical information by the leading experts in two hemispheres, when supplied with a good index, is certainly worthy of preservation in this permanent form. It makes a standard book of reference, good for all times, and we are glad to note that so it is being considered by a greater number of photographers every year.

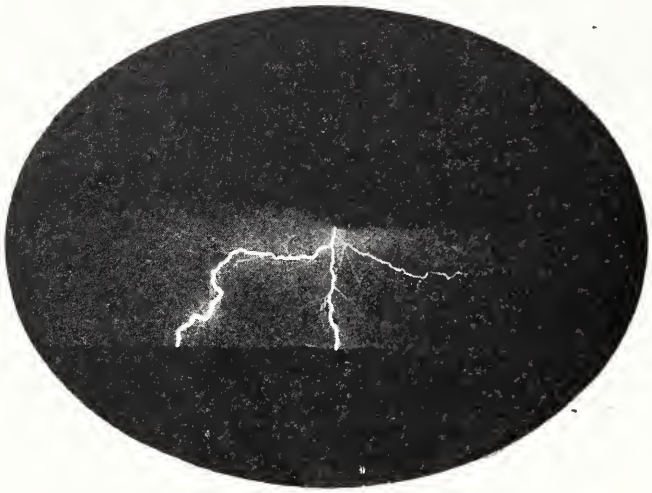
With each succeeding year the demand for bound volumes has increased to such an extent, not only for the current volumes but for back volumes as well, that nearly all the earlier bound volumes have been sold. Only a few odd volumes published between 1873 and 1884 are still to be had, but of subsequent years complete volumes can be supplied only for 1885, '86, '88, '90 and '91.

We direct the interested reader to the advertisement, also on the front cover, which treats of this matter more fully.

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ANOTHER LIGHTNING FLASH.

THE accompanying illustration is from a photograph by Mr. George W. Norris, an amateur photographer, of Philadelphia. It is an interesting flash of lightning, showing, as Mr. Norris writes,



"three streaks branching out from one." The secondary streak from each shows very well. It was taken during a thunder-storm at night, on a Cramer Crown plate.

Mr. W. N. Jennings, the lightning expert, says: "This flash is a very interesting one, but as the camera was evidently left open for some time, I am unable to judge whether the discharge is a double or single one having branches. If the picture had been made with a stereoscopic camera the question could easily be answered.

"The photograph shows very clearly a phase of lightning which I have often pointed out, and which may be noticed in my lightning photographs reproduced in THE PHOTOGRAPHIC TIMES of May 16, 1890; the gradual thickening of the discharge as it ends its flight, also the absence of 'zigzag' lines. The picture is well worth a place in THE TIMES."

NOT PERMANENT.

A clever scheme of the wily Chinaman to evade the Chinese Registration Act has been discovered by a government detective in Philadelphia. While passing through Chinatown the other day the detective noticed a Chinaman unloading a photographic apparatus from a wagon. As cameras do not usually form part of the furnishings of the homes of the Chinese, the detective's suspicions were aroused.

He followed up the man, and in a few days he had learned the essential details of the plan the Chinese have taken to avoid the Registration Act. The act requires the Chinese to have their pictures taken and to file them at the office of the Internal Revenue Collector. The picture is posted on the certificate of registration, and a Chinaman can be compelled to go before the Collector and be identified by his photograph if any question of his legal right to be in this country is raised.

The Philadelphia Chinaman with the camera has been taking lessons in photography and in the art of using a preparation that will cause a photograph to grow dim and faded within a year. When the Registration Act goes into force next May the Chinese of Philadelphia will have their artistic countryman photograph them, and after applying his fading preparation to the picture it will be filed with Collector Brooks.

Within a year the picture will be so dim that it will be almost unrecognizable, and Collector Brooks will be unable to tell whether the man before him is the original of the photograph or a recent importation from China. It is said the scheme has been transmitted to the Chinese in all the large cities of the country and that photography is being zealously studied by the Celestials.

EDITORIAL NOTES.

THE PRINT INTERCHANGE.—Apropos of our editorial of last week on the subject of exchanging prints, we call the attention of our readers to two requests in the same number of the magazine which indicate that there is a desire on the part of some for the very thing we propose to undertake. We refer to the letter of Walter D. Welford, of Birmingham, England, on page 8, and the advertisement of Mr. Griggs, of Clinton, N. C., under the Business Notices of same issue.

OBITUARY.—John Barnett, one of the oldest manufacturers of and dealers in photographic materials in this country, died suddenly, Friday, Jan. 6th, in the sixty-third year of his age, at his residence, No. 832 Broadway, New York City.

Mr. Barnett engaged in the manufacture of Daguerre cases and similar articles in 1855, and has been more or less actively employed in the manufacture and sale of photographic goods ever since.

He was well known throughout the entire profession in this country, and was universally esteemed. His funeral occurred Sunday afternoon, Jan. 8th, at three o'clock.

A FEW THINGS WORTH KNOWING.

[From David & Scolik's Note and Reference Book.]

When preparing developer use distilled or rain water.

Dissolve the different ingredients, one after the other, never all at the same time.

It is not advisable to filter developing solutions. Decant them in completely filled and well-stoppered bottles. Continued contact with atmospheric air oxidizes many developing agents quite readily, amidol especially so.

Keep all developing solutions in the dark-room, excepting ferrous sulphate and ferrous oxalate upon which light has a preserving influence.

Intensifier with Hydrochinon and Silver.

A

Hydrochinon	45 grains
Water	6 ounces
Nitric acid, ch. p	17 minims

B

Nitrate of silver	60 grains
Water	2 ounces

Bathe the negative plate to be intensified in a mixture of

Water	50 parts
A solution	25 parts
B solution	3 parts

The process is slow, but any degree of intensity is attainable.

It is self-understood hyposulphite of sodium must be thoroughly eliminated from plates subjected to this treatment.

Varnish for Gelatine Plates.

Alcohol 96 per cent	14 ounces
Sandarac (selected)	3½ ounces
Castor oil	1 ounce

Before applying the varnish heat the negative slightly.

This varnish is first-class to retouch upon with pencil of any degree of hardness.

Platinum Toning Bath

for all kinds of aristo and other silver prints :

Potassic platinous chloride	15 grains
Distilled water	16 ounces
Nitric acid, ch. p	10 minims

To attain to perfect platinum tones, allow the prints to rest in this bath for from 10 to 15 minutes The prints must be thoroughly washed previous to toning.

Chloride of silver collodion or gelatine prints should be squeegeed upon matt surfaces to give them the character of platinotypes.

Sensitizing Solution for Carbon Tissue.

Potassium bichromate	1 ounce, 2½ drachms
Distilled water	34 ounces
Aqua ammonia fort	85 minims

The solution is a little more concentrated than that generally used.

Anastigmatic lenses are non-symmetrical double objectives, constructed of a double concavo-convex anterior and a triple concavo-convex posterior lens. The anastigmatic lens projects a nearly sharp image by full aperture, and possesses most uniform power of disposing light. It is for these reasons the most appropriate lens for instantaneous work.

TRANSFERS WITH COLLODION PAPERS.

While Eastman's transferrotype was and is a good thing for certain classes of work, still the time required for its manipulation, the monotony or at least limited range of its tones, and its lack of delicacy in rendering values have prevented its application to the diversity of uses which the transfer idea would seem to make desirable.

A much simpler process, without any of its limitations, is now within the reach of everybody. Almost any of the collodion papers (not excepting, at present, the "American aristo") can be printed, toned and fixed as usual, and then when dropped into boiling water the film will peel off the paper inside of a couple of minutes. For some purposes it can at once be placed on its support and the operation is completed; but in the case of watch crystals, or where the support is to give the background tint, then it is necessary to rub off the paper coating which adheres to the collodion. This can be done by first laying the print face down on a glass and then rubbing it gently with a tuft of cotton wet with hot water; this treatment brings the print as clear as a wet-plate transparency, and it can now be transferred to any surface. I find it best, though, to coat the support with a comparatively strong substratum of gelatine, and allow it to dry; then when the transfer is to be made the prepared support is slipped into clean water under the cleaned print; this allows the substratum to soak up as much water as it will, and if air bubbles are pressed out from under the print, there is perfect contact between the film and its support.

Some manufacturers use a paper which is coated with a mixture which boiling water will not soften; these papers are not suitable for this purpose, as when the films come off it brings a thin layer of paper with it. The American aristo was formerly that way, but it is not so now; and I think most of

the collodion papers have a substratum which softens in boiling water, as it is no disadvantage in the practice of ordinary print making.

The advantage of pouring boiling water on the print with the fixing solution still in it, will be apparent when it is noted that the alkali of the toning bath and the hypo have already helped the preliminary softening; while there is the very material assistance of the osmotic action set up under the circumstances; in some papers this is so great that the print blisters entirely off the paper. Of course three or four rinsings in such water entirely clears the film of hypo, thus insuring permanence.

As for range of tones there is practically no limit from the bright red to the platinum black; according to the subject, every intervening tint is available. For transfers to gold watch cases the ordinary photographic purple tone gives a very fine effect, and not a tint or value in the gradation of a suitably delicate negative is lost.

The advantage of this method over the carbon process for inflexible surfaces, is apparent when it is considered that the image is not necessarily reversed, which is the only way possible with the single transfer of the carbon print.

R. W. Harrison.

A CONTRIBUTION TO THE HISTORY OF AMIDOL.

[From *Deutsche Photographen Zeitung.*]

DIAMIDOPHENOL in the form of hydrochlorate and sulphate salts, and under the name of *amidol*, has of late been extensively employed as photographic developer.

The substance is, however, nothing new, for F. Gaube prepared it as early as 1869 by reducing o-p-dinitrophenol by means of iodophosphorus.* Since that time it has become the object of manifold researches † Hemilian proved that when o. p. dinitrophenol is reduced, salts of diamidophenol are formed, but not salts of diamidobenzol, as Gaube had asserted.

When investigating the properties of amidophenol and its substitution products with a view of their probable adaptation as photographic developers, M. Andresen found in 1890 that besides other substitution products of amidophenol, both of the amido p-amidophenols, the o-amido-p-amidophenol (o-p-diamidophenol) and the m-amido p-amidophenol may equally well be applied to the same purpose, in consequence of which his invention was protected by patent No. 60,174 of the German Empire, dated January 27, 1891, and by corresponding patents in foreign countries, claiming the right to employ all these substitution products as photographic developers. Andresen assigned his patents to the Actien Gesellschaft für Anilin Fabrication in Berlin, and the company introduced first of all these substances a highly concentrated solution of p-amidophenol under the name of rodinal, and later on its hydrochlorate salt.

F. Reverdin and Chas. de la Harpe had in the meantime paid much attention to the o-p-diamidophenol, and noticed that the alkalinity of sodium sulphite suffices to form with o-p-diamidophenol a powerful developer. In No. 4 of *Die Deutsche Chemiker Zeitung*, Jan. 13, 1892, referring to o-p-diamidophenol, they say distinctly:

"In aqueous solution, mixed with from 5 to 6 parts of sodium sulphite it acts with great energy upon light-exposed plates."

Dr. J. M. Eder speaks in detail of diamidophenol (amidol) as a developer in the June number, 1892, of *Photographiche Correspondenzen.* The material to Eder's experiments has been furnished under date, February 28, 1892, by the chemical works of J. Hauff, in Feuerbach. Said firm had in the course of the present year (1892) exported much of o-p-diamidophenol to foreign countries and under the name of amidol.

In Germany amidol became accessible since the Actien Gesellschaft für Anilin Fabrication had manufactured it, and brought upon the market, resting thereby upon the protection granted by letters patent to M. Andresen and assigned to the company. On the different opinions of these two firms how far Andresen's patents can reach, decision will be given elsewhere.

Dr. M. Andresen.

* Liebig's "Annalen der Chemie," 147, 66.

† Heuking's "Inaugural Dissertation," Göttingen, 1873. Hemilian's "Berichte der Deutschen Chemischen Gesellschaft," 1875, viii., 768.

Red Printing Process.—M. Letellier gives (in the *Revue Photographique Nat. Dr.*) the following process, by means of which it is claimed that prints of a red tone can be obtained: In a small quantity of water mix 72 gm. of nitrate of uranium and 20 gm. of nitrate of copper, then neutralize the solution with a little carbonate of soda, and make up with water to measure a litre. Paper sized with gelatine or arrowroot is floated in the solution for a minute or two, and dried in the dark. Printing is carried out beneath the negative until the image is fairly visible. It is then developed with an 8 per cent. solution of potassium ferrocyanide until the required density is obtained. Fixing is accomplished by well washing with plain water. If sepia tones are required, the uranium-copper solution is neutralized with ammonia, and the developing solution made of 2 per cent. ferrocyanide only.

ON SILVER HEMISULPHATE.

[American Journal of Science.]

THE existence of those substances which I described some years ago under the name of photosalts of silver, necessarily implied the existence of the hemihaloids of silver also, as these latter entered into the composition of the photosalts. Similar inferences, though less definite, had long been drawn from the action of light on the silver haloids. Two of these, the chloride and bromide, lost by the action of light their complete solubility in ammonia without becoming completely soluble in nitric acid. Evidently there was indicated an intermediate compound between the normal haloids and metallic silver. During the last ten or twelve years I have devoted much time to the attempt to isolate these lower compounds of silver, and to gain some certain knowledge as to the hemioxide, whose existence seemed almost a necessary inference from that of the hemihaloids. Some eight years ago I obtained a substance having all the properties which one would be disposed to ascribe to Ag_2Cl, and a large number of analyses made seemed to confirm the view. I hesitated, however, to publish a description of it, not feeling entirely certain that it might not be a mixture, as to which a concordance of the proportions found of Ag and Cl with theory gives no sufficient information. Since then M. Guntz has described a subchloride obtained by acting on silver hemifluoride with phosphorus pentachloride and a hemioxide derived from it. Up to the present time no combination of silver hemioxide with an oxyacid has been known.

Such a combination I have been able to obtain as a double salt of hemisulphate and normal sulphate containing one molecule of each. The new salt has a light brown color, and exhibits a stability which, in view of its composition, is something remarkable. It has no tendency either to oxidation or to reduction. Nitric acid, unless very strong, has but little action upon it. Acid of 1.42 poured over it in large excess, and let stand for several days, gradually dissolves it completely, but the same acid diluted with two or three times its volume of water, has so little action that it forms a convenient means of purification. On the other hand, ferrous sulphate, which instantly reduces argentic sulphate, has no action whatever on the new substance, even with several days' contact. Hot, strong sulphuric acid has no action. It might almost be expected that under its influence the argentous salt would gradually take up oxygen and be converted into argentic sulphate. But a specimen which was covered with a large excess of undiluted sulphuric acid in a flask, and was kept under boiling water for ten hours, was not altered thereby. Another strong proof of its stability is found in its resistance to heat.

The application of heat produces a somewhat curious succession of colors. The terra cotta or warm brown shade of the moist substance changes by drying above 100 deg. to pale lilac, at 165 deg. to 170 deg. it becomes greyish, at a somewhat higher temperatures, yellowish green. Considerably below red heat it acquires a fine ruby red color. In cooling, this red darkens almost to black, then becomes lighter again, and when cold the color is light olive-green. The changes are repeated as often as the substance is heated and cooled. No sulphuric acid vapors are disengaged even at a low red heat.

It was mentioned in a previous paper that when silver nitrate is reduced by solutions of phosphorous or hypophosphorous acid, or by acidified solutions of their alkaline salts, transcient colorations were produced that seemed to suggest the presence of some form of allotropic silver. Since that paper was published this reaction has been taken up for further study. It soon appeared that when the silver salt was treated with a solution of alkaline hypophosphite, accidified with sulphuric acid, the result obtained was entirely different from that which presented itself under any other circumstances. It became clear that sulphuric acid did not act solely by setting free the hypophosphorous acid, but also acted on the silver with formation of a double sulphate.

A remarkable though limited analogy here presents itself between the substance just described and the photosalts of silver. The silver hemihaloids are very unstable substances, but acquire stability by uniting with the normal haloids. In the same way the hemisulphate, which is not known to be capable of separate existence, becomes perfectly stable by union with the normal sulphate. The limitation to this analogy lies in the fact that the last-mentioned combination occurs in definite proportions, which does not seem to be the case with the halogen compounds.

The new substance, is then, formed by the joint action of sulphuric and hypophosphorous acid on a silver salt. Hypophosphorous acid has but little action on silver sulphate already precipitated, but it is different when the silver sulphate is formed in presence of hypophosphorous acid.

Several silver salts may be used. I have at different times employed the nitrate, phosphate, and carbonate. The latter is perhaps the best,

because the action with the nitrate is too rapid, and with the phosphate too slow, and for other reasons.

A weighed quantity of silver nitrate is precipitated with an excess of alkaline carbonate and washed. The carbonate as well as all other reagents employed, must be absolutely free from chlorides, otherwise the product becomes contaminated with silver chloride which cannot be removed. The silver carbonate is then treated with a solution of alkaline hypophosphite acidified with sulphuric acid. All the alkaline hypophosphite of commerce contains much more than a trace of chloride: this is best got rid of by adding to its solution a little solution of silver nitrate, stirring well at intervals, letting stand for twenty-four hours, and filtering. This filtrate, with addition of sulphuric acid, is to be poured over the moist silver carbonate, and constantly stirred The reaction is complete in twenty or twenty-five minutes, when a bluish-black film of reduced silver begins to form on the surface. Further action is then cut short by neutralizing the liquid with alkaline carbonate. The precipitate is next to be washed several times by decantation. Very pure distilled water is, of course, needed throughout.

Convenient proportions are: forty grammes silver nitrate, precipitated with excess of alkaline carbonate. Of sodium hypophosphite, 100 grammes dissolved in 650 c.c. of water, are treated with a little silver nitrate, and after standing and filtering four c.c. of sulphuric acid are to be added and the liquid poured over the silver carbonate. After a few minutes, six c.c. more of sulphuric acid, diluted with a little water, are added by degrees. With this second quantity of sulphuric acid the characteristic reddish-brown color of the substance first appears.

This process may be varied by precipitating with disodic phosphate (which must be perfectly free from chloride) instead of alkaline carbonate. The action is much slower, about twenty-four hours being needed. Silver nitrate itself may be used, but the action is too rapid and the product is less in quantity.

The crude product obtained in either way is to be purified with nitric acid. Acid of 1.42 is diluted with three times its volume of water, and of this dilute acid a quantity is taken about double in volume to that of the precipitate and of the water left after decanting closely. After a time some effervescence takes place, but the mixture does not become warm. After standing for three or four hours over the precipitate, it is to be poured off and the precipitate washed. This treatment with acid is applied three times; the first removes a good deal of silver, the second a little, the third a trace. Each time the acid is left three or four hours in contact. The product is then washed by pouring on it a large quantity of boiling water. This is repeated four or five times, each time (except the first) placing the vessel in a water bath kept at 100 deg. C. for several hours.

The product is either dried in the air or (for analysis) at 100 deg. C. It forms a bright brown substance, permanent in the air, changing to violet when kept for some time at 160 deg. C. It has the peculiarity that when water is poured on it, it makes a sharp hissing noise. This takes place with the air-dried substance as well as that dried at higher temperatures, and as much with the former as with the latter.

The substance after purification has about one-half the weight of the silver nitrate taken.

These proportions and this mode of operating are those that I have found to give the best result. But the substance is formed under a great variety of conditions. It seems impossible to bring a silver salt in contact with alkaline hypophosphite acidified with sulphuric acid without producing more or less of it. Its presence is often completely obscured by reduced silver. But a mass that looks perfectly black and might be supposed to contain nothing but metallic silver will leave, when treated with nitric acid, a bright brown residue of the double sulphate. We have here, as before, an analogy with the photosalts. For it will often happen that a blackish mass, containing metallic silver, and mixed or combined silver chlorides, will, when treated with nitric acid, resolve itself into bright purple or rose-colored photo-chloride.

M. Carey Lea.

(To be continued.)

PIN-HOLE PHOTOGRAPHY.

[Read before the Photographic Society of Japan.]

ATTENTION has been called many times to the quality of photographs that can be obtained in a darkened chamber, or camera, without special optical apparatus, simply by means of a small hole in a very thin plate.

Amateur photographers can make pictures, pretty large in size, of landscapes and even of monuments, without being obliged to buy lenses costing from $10 to $300.

No doubt to reproduce plans and engravings it is necessary to use the famous lenses of Ross, Dallmeyer, Beck, Hermagis, Francais, Nadar, and

others. But we wish to perceive, when we examine a photograph, the particular effect which is produced on a more or less near-sighted eye by its entire surroundings, when it looks at nature from a little distance. It seems to us that suppressing the lens and replacing it by a pin-hole gives more artistic results as far as regards monuments or landscapes without moving figures.

"Nevertheless, far from us," says the *Amateur Photographer* (journal), "is the idea of crying down the photographic lens, which has in the last year attained so great perfection; for in the greater number of cases these instruments are, and will remain, indispensable." But leaving out the instantaneous photograph, which has such charm for the amateur, and the portrait, the specialty of the professional, let us confine our ambition to obtaining in as artistic a manner as possible either landscapes or copies of monuments, and of these latter there are certainly no lack in Japan.

M. Meheux says that the most suitable hole is round, and drilled in a plate of copper or sheet brass of $\frac{2}{10}$ millimetre in thickness; it is necessary that the borders show no burr and are bevelled, forming a cone.

Captain Colson has remarked that although the depth of focus is unlimited, the greatest sharpness of definition for each size of hole is found at a determined distance, and he has succeeded in finding the proper focal distances for different diameters of holes; he has thus found that—

The best definition for a hole $\frac{3}{10}$ mm. is at 11 cm.
The best definition for a hole $\frac{4}{10}$ mm. is at 20 cm.
The best definition for a hole $\frac{5}{10}$ mm. is at 30 cm.
The best definition for a hole $\frac{6}{10}$ mm. is at 44 cm.

It may be mentioned that the size of the object to be reproduced is proportional to the distance from the apparatus, and to the distance from the hole to the sensitive surface.

It follows from this rule that after having taken, for example, one view of an entire cathedral with a focal length of 20 centimetres—say, with the $\frac{4}{10}$ millimetres diameter of hole—if we wish to have the details of the gateway without moving from our place, it is sufficient to lengthen the focus to 44 centimetres, and to use the $\frac{6}{10}$ millmetre hole.

We may further remark that the *stenope*—the name given to the above-mentioned plates—easily includes an angle of 100 degrees, or even more, without at all deforming architectural lines, and without destroying the perspective, which is far from being the case with even the most perfect wide-angle lens.

The length of exposure presents much less difficulty than with lenses; except we expose enormously beyond the proper time, it is nearly impossible to over-expose: we can always obtain a good negative by developing intelligently.

Nevertheless, if one must have a general approximate rule, we may say as a general proposition that the time of exposure is at least twenty-five times longer with the $\frac{3}{10}$ millimetre hole than with a lens focused upon the same view and provided with a medium diaphragm; fifty times longer with the $\frac{4}{10}$ millimetre hole, one hundred times longer with the $\frac{5}{10}$ millimetre hole, and two hundred times longer with the $\frac{6}{10}$ millimetre hole; it being well understood that we use the focal lengths corresponding to these holes.

But we can modify these times of exposure without over-exposing the plate; on the whole this depends very much on the plates, the developer, and the actinic power of the light. Experience will be the best guide for every class for picture. Just the same as in nature, the sun has here great influence on the clearness of the view, more than it has when using lenses.

To sum up the advantages of using the *Stenope:*

1. More artistic definition than with a lens.
2. Unlimited depths of focus.
3. Perfect perspective for lines in architecture.
4. Mathematical exactness in the scale of plans.
5. The angle of view can include as much as 170 degrees.

All the proofs, under the numbers 1, 2, 3 and 4, represent the same subject, and are taken with the same apparatus from one and the same distance, say 20 meters from the corner of a house marked A. The number representing the house and garden was taken with the $\frac{3}{10}$ millimetre hole, distance from hole to sensitive plate 11 centimetres, time of exposure 1 minute 25 seconds.

No. 2 view from same plate with the $\frac{4}{10}$ millimetre hole, 20 centimetres from the plate.

No. 3 is taken from the $\frac{5}{10}$ millimetre hole, 30 centimetres from the plate; and finally, No. 4 is taken with $\frac{6}{10}$ hole, 44 centimetres from the plate; distance between the apparatus and the house 18 to 20 metres. Time of exposure varies in the different numbers from 1 minute 25 seconds to 2 minutes 30 seconds.

J. Favre-Brandt.

USED TO IT.

"I suppose photographers are troubled greatly by poor sight."

"What makes you think so?"

"They have so many *films* before their eyes."

THE POWER OF FLATTERY.

"He seems to be the most successful photographer's agent on earth."

"What is the secret of his success?"

"Oh, he praises the looks of every woman he meets and then it's easy work to get an order for his employer!"

Notes and News.

Messrs. Hovey Bros. have removed their salesrooms from 158 East Main Street to 42 State Street, Rochester.

"I value The Times highly, and I appreciate your efforts to make an artistic, as well as a useful journal."—C. M. KNIGHT, Akron, Ohio.

The Engraver & Printer for January, 1893, contains "The Mill-Race," by Daniel Frazier, which embellished THE PHOTOGRAPHIC TIMES for several weeks.

Dissolved.—The partnership hitherto existing under the firm name of Burnham & Grant, at Burlington, Vt., was dissolved January 5th by mutual consent, L. C. Grant retiring from the firm, and L. G. Burnham continuing the business.

The firm of Tieman & Bartlett, doing business in photographic supplies, has been dissolved by mutual consent, Herman N. Tieman will continue the business at the old place, and has sole right to collect the claims of the firm, or to sign in liquidation.

The Camera Division of the Jersey City Athletic Club gives a photographic exhibition at the club-house, cor. Clinton and Crescent Avenues, commencing Monday, Jan. 16th, and continuing for one week, afternoons and evenings. Mr. Floyd Vail is Chairman of the Exhibition Committee.

As It Were.—"I saw an elephant who was so friendly with its keeper that it allowed him to sit on its tusks, He made a splendid picture as he sat there, and you ought have been there to photograph him."

"Yes, it would have been a sort of photograph on ivory, as it were."

The Reflectograph.—J. E. Blackmore has made application in Washington for patents to cover a new invention called the Reflectograph. It is a machine so constructed that it can be used where any ordinary hand camera is used, but instead of making a single picture of a certain view or object, it records every movement of any object before it and by a very simple arrangement.

The pictures are taken on an endless belt which moves automatically with the shutter that causes the exposures to be made at a very rapid rate.

Hetherington & Hibben have incorporated their business under the title of The United States Camera Co., with $25,000 capital stock paid up, and the business will be conducted by them under the above title as heretofore.

They now have ready for the market, in addition to their Prize Magazine Camera, a very attractive magazine box holding six plates, with the Gray lens, which will be sold for $25.

The well-known stock house of H. Lieber & Co., Indianapolis, Ind., are constituted trade agents for the United States.

Stolen!—The following lenses are missing from our New York warerooms, and it is presumed that they have been stolen: 1, 8x10 Orthographic Lens, No. 486; 1, 6½x8½ Orthographic Lens, No. 363; 1, 5x8 R. V. T. & H. Lens, either No. 5184 or No. 2649; 1, 5x8 R. V. T. & H. Lens, No. 2204; 1, 4x5 Taylor & Hobson Lens, No. 2019, with shutter. If they are offered to you, you will oblige us by holding the same or doing that which in your judgment will best protect our interest, and notify us of your action. We should be pleased to reciprocate at any time. Address THE BLAIR CAMERA CO., either at 471 Tremont Street, Boston, or 451 Broadway, New York.

Yellow Screens.—*By Col. J. Waterhouse.* (*B. J.*)—The best screens for orthochromatic work are made of clear thin talc or mica, coated with a cold drying crystal varnish, made with benzole and sandarac or dammar colored with annatto or turmeric. Most of the yellow "coal-tar" dyes are unfortunately insoluble in benzole. Varnish is far more structureless than collodion.

The formula used was as follows:

Turmeric varnish	2 parts
Annatto	1 part
Kamala	1 part

The turmeric varnish has a greenish tinge, the annatto a reddish tinge, and the kamala (made from a powder obtained from *Kottleria tinctoria*) a neutral yellow. By varying the proportions, different tints can be obtained. Other yellow dye stuffs soluble in benzole could also be used. This varnish applied to worked glass gave very good results for copying work, when placed behind the lens.

Toning with Acetate of Lime.—(*Phot. Franc.*)—M. Hermitte of Marseilles finds the toning bath given below to keep its activity better than that made with acetate of soda. His formula is as follows:

Distilled water	500 c.c.
Brown chloride of gold	1 gramme
Distilled water	1500 c.c.
Acetate of lime	27.5 grammes

The latter solution an hour or so before use should be strengthened with a little of the solution of gold and should be filtered from carbonate of lime before putting away.

Toning with Cobalt—*By M. A. Redares.* (*Bull. Soc. Franc.*)—After trying the sulphate, nitrate, and chloride of cobalt, the last alone gave satisfactory results.

The following bath, by depositing the brown oxide of cobalt on the print, yields a reddish tone which, however, still leaves something to be desired:

A.

Water	1000 c.c.
Cobalt chloride	10 grammes

B.

Water	1000 c.c.
Calcium acetate	40 grammes

To tone, equal parts of A and B are taken, mixed together, and allowed to rest for three or four days. The

solution is then filtered and rendered absolutely neutral by the addition of hydrochloric acid or bicarbonate of lime, whichever may be necessary. The prints are fixed in hyposulphite of soda in the ordinary method.

The Intensification of Collodion Emulsion Plates.—For half-tone pictures the mercuric bichlorides and ammonia intensifier should be avoided; it tends to destroy the gradation of the tones. By the addition of acid any developer can be used with silver nitrate as an intensifier for these plates. Metol has given good results both with these and with wet plates. The formula recommended is as follows:—

A.

Metol	15 grammes.
Citric acid	10 grammes.
Distilled water	1 litre.

B.

Nitrate of silver	10 grammes.
Distilled water	100 c.c.

The operation is conducted as in the silver intensification of wet plates.

Glycin as a Developer.—*By Dr. J. M. Eder.* (*Phot. Corr.*)—Glycin is oxyphenylglycin with the formula—

$$C_6H_4 \begin{cases} OH \\ NH.CH_2.COOH. \end{cases}$$

It is a light glistening powder which dissolves in water after the addition of an alkali or alkaline carbonate, forming an almost colorless fluid which, when sulphite is present, will keep, and which acts as a powerful developer.

The following formulas can be used with gelatino-bromide plates.

Glycin	5 grammes.
Sodium sulphite	15 grammes.
Caustic potash	25 grammes.
Water	90 c.c.

Before use this concentrated solution can be mixed with three or four times its bulk of water.

Glycin	3 grammes
Sodium sulphite	15 grammes
Crystallized sodium carbonate	22 grammes
Water	250 c.c.

The latter solution is ready for use immediately, or can be kept in corked bottles for a long time.

Glycin cannot be classed with the rapid developers (metol, etc.), but may be described as one which works slowly, producing negatives which are very clear, transparent, and free from fog.

AMIDOL.

Yes, this developing agent has come to stay, and, as you observe in the issue for October 15th, it is the most formidable rival that pyrogallol has had to face; but it will not work according to the formula sent out by the manufacturer, except for snap shots or for interiors where there are violent contrasts, because, under normal conditions, it is impossible to get anything like a printing density. The great value of amidol lies in the fact that it is a developer in itself, requiring no alkali to bring its reducing powers out, and on this account alone it is worthy of every consideration. Another great point in its favor is that a plate can be developed in it without attention, the constant rocking so essential with pyrogallol not being required, as no matter how long a time the development takes there is no mottling of the film. No matter how short an exposure has been given, with amidol, it seems to be only a matter of time to obtain an image, and that without any danger of fog or frill.

For good negatives, where a normal exposure can be given, pyro-soda will yield far better negatives than amidol, because the color of an amidol-developed negative is the old objectionable color of a ferrous oxalate negative, pretty to look at, but it does not pan out in the printing frame to anything like "pay dirt," and to use the amidol at such a strength as will give a better color, reduces the exposure in an unmanageable degree. Thus far we are dealing with the manufacturer's formula, but if that is modified by the addition of a little bromide we then obtain a plucky negative and gain a very appreciable amount of sensitiveness over pyro-soda, the formula the writer has found good for ordinary work being as follows:

Amidol	120 grains.
Water	20 ounces.
Potassium Bromide	10 grains.
Soda Sulphite	1 ounce.

Such a mixture gives fine, strong negatives in the studio.

The developer can be used over and over again, as it does not discolor, neither does it stain; and if the plate has been under-exposed after a rinse under the tap, the plate can be immersed in another solution in which the bromide is omitted and the amidol weaker, then left until the image is sufficiently developed.

Mixing amidol with hydroquinone and using an alkali gives good results in a way, but a great deal of the advantages of the amidol are lost; on the other hand the hydroquinone is improved, but then a mixture of eikonogen and hydroquinone can be used with precisely the same results, viz., a toning down of the violent contrasts given by hydroquinone.

As a summing up it may be put in this way: Where the requisite exposure can be given and the best possible results are required, pyro-soda *must* be used; but where it is not possible to give a normal exposure, or when the contrasts are very great, then amidol will come in useful, simply because with amidol negatives can be obtained that are utterly impossible with pyro.—*W. T. Wilkinson in Wilson's Photographic Magazine.*

AN INTERESTING INTERVIEW WITH MR. B. J. FALK.

A man apparently about thirty-five years old, with clear olive complexion and liquid black eyes, such is the famous New York Photographer, B. J. Falk, who received a *Times Democrat* reporter at the St. Charles Hotel, and talked interestingly about the progress of his art. The nineteenth century is the age of photography. Out of every ten men one meets now-a-days, six has his camera, and the successful professional photographers are men to whom no phase of art is a sealed book. What a man who is famous in two continents, whose copyrighted pictures are seen in every shop has to say on the subject of this popular form of art, should have the widest interest.

"What do you think of the work of the photographers as compared with that of a great portrait painter?" Mr. Falk was asked.

"I will answer with what may sound like a paradox.

The camera is at once the best and most truthful medium for art work, as well as the one with the most limitations. There is a great class of work open to the painter which is entirely outside of the photographer's field, and such work should never be attempted by the latter. When it is the results are ludicrous, as is shown where positions of the human figure are attempted which the lens cannot reproduce without distortion or exaggeration. But this is technical. As far as portraiture pure and simple is concerned, the general impression seems to be that the realistic school is the only one for the camera. This is not true; if it were, one would get a map of the human face, but not a portrait. Everybody knows there is the same difference visible between good artistic photographic pictures and poor ones, although technically they may be equal as between good and poor portraits produced by pencil or brush. All of which shows what has come to be recognized pretty generally during the past ten years that the camera, like the brush or pencil, is simply a tool, and may be handled well or ill. Formerly the overcoming of technical difficulties was enough to give any photographer a prestige, but now that these have been swept away, the photographer has been placed on the same plane as any other artist, and he must be judged by the same standards."

"Are the portraits of popular artists or prominent persons purchased to any great extent in this country?"

"They are being made and sold to the dealers more than ever. Probably nearly 250,000 such pictures are published annually. The taste for studies of beautiful heads from life is growing all the time. The public soon tires of a picture, however good. It wants new pictures all the time —Edwin Booth's latest portraits and those of Jefferson, Modjeska and other popular artists are continually in demand. This is remarkable, perhaps, but the later pictures are usually better, considered as portraits."

In answer to the question what are the best selling pictures at the present time, Mr. Falk mentioned those of Lillian Russell, Marie Tempest, Belle Archer, Julia Marlow, Isabella Irving, Marie Jansen, Della Fox, and lately, Blanche Walsh. Among the actors, portraits of Jefferson, Barrymore, Herbert Kelsey, Kyrle Bellow and Otis Skinner are widely sold.

"By the way, Mr. Falk, what kind of a sitter was President Cleveland?"

"He came to the gallery all worn out with the excitement of notification week, entirely unlike the descriptions I have read of him, mild and gentle, and with a more worried expression than I had ever seen on any man's face. I was disappointed, and looked about for something to say or do to drive this careworn look away. At the last moment I said: "Mr. Cleveland, there are six good democrats in our family. 'Yes?' said he, and his face lighted up. That was the expression I wanted, and it was caught and fixed by the camera. The result was the portrait you have seen.

"The most troublesome sitters," said Mr. Falk, "are people whom one has never heard of; who wish to look, in their photographs, like those who have been. They watch your every movement with distrust, and exhale a sort of antagonism which is uncomfortable. Now, with great men, like Edison, Ingersoll, Salvini, and all the famous actors and actresses, it is a pleasure to pose them. They have merely a suggestion to make, but by the confidence which they show they have in you they put you in the best frame of mind for doing the best work. I have often thought," added Mr. Falk, "that the photographer, rather than the modern portrait painter, has the greatest opportunity of pleasant intercourse with his clients like that formerly enjoyed by Sir Joshua Reynolds."

The celebrated photographer paid a high compliment to the lovely faces he has seen in his short visit to New Orleans by saying that he had felt an almost uncontrollable desire to pose their fortunate possessors. "The professional photographer of to-day finds his best subjects in that casual way," said Mr. Falk; "if he sees a beautiful face in the chorus of an opera company, in a shop, or any place whatsoever, he endeavors to secure a portrait of her. Such work is a labor of love, and many prominent professional people to-day will confess that their popularity is in a great measure due to the wide sale of their pictures, and as a consequence of the friendly feeling, almost that of personal acquaintance, between them and their audience, brought about in this way."

"Is there any truth in the reports intermittently cabled from Europe about the discovery of photography in colors?"

"There have been about a thousand minds working on that fascinating question for fifty years, but as yet no successful result has been attained, despite all the dispatches you refer to. If you wish to know if I think this will be achieved some day, you may put me down as one who has changed his opinion to the affirmative on this question. Formerly, considering only the nature of the sensation of color on one hand and the chemicals we had to deal with on the other, it appeared absolutely impossible to me, but since the perfection of the phonograph—that marvelous inspiration of the most unassuming of great inventors—I can believe in any modern miracle. This matter has been the dream of many years of my life, and I sincerely hope it will some day be achieved."—*The St. Louis Times Democrat.*

HOW TO MAKE "HEAT-PROOF NEGATIVES."

ONE of the greatest drawbacks to the dry-plate method of making negatives has always been the long time required for them to dry, and another drawback has been the necessity of varnishing them if any considerable quantity of prints were required. We have from time to time been given formulas for hardening solutions. Negatives treated with this have been declared to be impervious to the action of heat, or even boiling water could be poured over them without damage. One of the best of these methods is given by the Cramer Dry-Plate Works in their directions for working their plates, as follows:

FIXING AND HARDENING BATH.

The negatives may be fixed in a plain hypo bath, 1 part hyposulphite of soda to 4 parts of water, but the following bath is especially recommended.

Prepare two solutions.

No. 1.

32 ounces Hyposulphite of soda	1 kilo
3 quarts Water	3 litres

No. 2.

1 quart Water	1 litre
¼ ounce Sulphuric acid	15 c.c.
4 ounces Sulphite of sodium crystals	120 grammes
3 ounces Chrome alum	90 grammes

After the ingredients are dissolved, pour No. 2 solution into No. 1.

During the cold season, one-half the quantity of No. 2 is sufficient.

This bath combines the following advantages: It remains clear after frequent use, does not discolor the negatives, forms no precipitate upon them and hardens the gelatine to such a degree that the negatives can be washed in warm water, provided they have been left in the bath a sufficient time.

The plate should be allowed to remain in the bath five to ten minutes after the bromide of silver appears to have been dissolved. The permanency of the negative and freedom from stain as well as the hardening of the film depends upon this.

Wooden boxes, with vertical grooves to hold a number of plates, will be found both convenient and economical for fixing.

When the bath becomes weakened by constant use it must be replaced by a new one. Prepare solutions No. 1 and 2 in advance (allowing plenty of time for the chemicals to dissolve) so as to have them ready when wanted.

In practice this method has been found most excellent and to do all that is required; but more than it would do has been needed, namely, a hardening material which would render negative dryable by heat, not only by the heat of the sun and the natural heat of the atmosphere, or of a heated room, or in a fairly close contact with the stove, but by actual exposure to heat. A method for doing this is claimed by Mr. A. Helmold, a veteran photographer, by the use of which, he says, that gelatine negatives are rendered so that heat will have no effect upon them, except, of course, that it will destroy them, What he means practically is that negatives treated with his solution, simply immersed in it, may be dried at once by heat, and as quickly as is desired, without burning or destroying them.

In other words, heat will not cause the gelatine to melt and fall upon the floor, or to disappear, or to frill, or in any way to become destroyed; and negatives treated by his method need not be varnished. Any quantity of prints may be made from them without the least fear of abrading or in any other way receiving damage. The ingredients for the solution are supplied dry in bottles, and need only to be dissolved in water. If a solution of one gallon, say, is made, that quantity of water is required for one bottle of hardening material. Pour it into a dish. This solution may be used repeatedly as long as it is clean and strong enough. Nearly 150 5 x 7 negatives may be rendered fireproof by one gallon of solution. The negatives should first be well fixed and then, with or without washing, placed in the solution for ten or fifteen minutes. They may be placed in the solution at once without first fixing; but the other way is better and as expeditious as the solution acts more slowly than hyposulphite of soda alone. After treatment the negatives should be washed, allowed to drain, and dried by heat, the same, and just as readily, as by the old wet-plate process. Less washing is required, however, as the film expels the hypo.

We understand that Mr. Helmold has arranged with The Scovill & Adams Co., of New York, for the exclusive agency of his material, and, of course, all the dealers will hear it. We believe it will be found a precious boon to the dry-plate maker, and enable him to retouch his negatives and deliver his proofs much more quickly than he could possibly do with the old methods.—*Wilson's Photographic Magazine.*

CHICAGO ACADEMY OF SCIENCES.

The Academy of Sciences at its annual meeting formally accepted the offer of the Lincoln Park Commissioners relating to the proposed Academy building. Under the agreement the Commissioners subscribe $25,000 and guarantee to pay the Trustees of the Academy $5,000 each year. The Commissioners are also to provide a custodian for the museum and library. The Board will have three rooms for their offices.

The election of officers resulted as follows: President, Dr. Selim H. Peabody; First Vice-President, B. F. Culver; Second Vice-President, Professor G. W. Hough; Secretary, W. K. Higley; Recorder, S. W. Burnham; Librarian, Charles A. Heath; Trustees, E. W. Blatchford, George C. Walker, B. W. Thomas. General Committee, B. F. Quimby, G. A. Douglass, Mark Powers, Dr. L. Curtis, C. H. Gordon, Dr. Charles G. Fuller. Membership Committee, Prof. E. S. Bastin, Joseph R. Putnam, Prof. G. W. Hough.

Prof. W. K. Higley read a paper giving a summary of the work done by the Academy the last year. Referring to the pathology section, he said: "If the Academy obtains permanent quarters for the section down town it is likely that a pathological museum will be established."

The Editorial Table.

Have you bound your Photographic Times for 1892?

Secure one of The Photographic Times Binders; the stock is limited, and they are going very fast.

If your volume of The Photographic Times for 1892 is incomplete, notify the publishers of the missing numbers and they will advertise for them for you without charge.

At Cost.—You can have your Photographic Times bound at cost, by sending the loose copies to the publishers, who will send you a bound volume in return, charging you merely the cost for binding—$1.

Complete sets of The Photographic Times are very rare, and in recent sales have brought higher prices than any of the other photographic periodicals.

"Back bound volumes of The Photographic Times are very scarce," as the advertisement states. A few copies of some odd volumes between 1873 and 1884 can be supplied to those who desire to complete their sets, for $1 per volume; but of subsequent years, volumes for 1885, '86, '88, '90 and '91 only can be supplied, and these bring the full publishers' prices. Other volumes are at a premium.

Liesegang's Photographischer Almanach und Kalender fur 1893.

This interesting Annual is again welcomed by us. The neat little book comes this year in much improved style, especially as regards contributed articles, of which many are highly interesting and instructive.

An excellent portrait of K. K. Rath Ludwig Schrank, photogravured by Riffarth and an autotype of Mons. Leon Vidal, are its illustrations.

Wilson's Photographic Magazine, for January, 1893, presents a decided improvement, both externally and within. It contains, as a frontispiece, a photogravure from a negative by Napoleon Sarony, of Mme. Modjeska, as Queen Catharine, and the articles are all well written, and full of practical information. There is more original matter in this number than in many of its predecessors. The cover also is a new one and makes a handsome appearance. *Wilson's Photographic Magazine* will be published monthly, at $3 per year; 30c. per copy.

We have received with compliments of Capt. William Imlah, of Quebec, a photograph appropriate to the season entitled "B" Battery's Christmas Greeting, 1892.

The Photographic Times Dining Club beg to acknowledge the receipt of some Torrone which was recently presented to it by Mr. C. W. Canfield. It was much appreciated, and did not "break the teeth" of any member of the club.

We have received from the editorial and business staffs of *The London Practical Photographer*, best wishes for the new year, signed by Percy Lund for the business staff and H. Snowden Ward for the editorial staff.

We return our friendly greetings for 1893.

We have received from W. C. Shafer, of Terra Alta, West Virginia, two 6½ x 8½ photographs, entitled respectively: "Runaways," and "Columbus-Day, Ready to Start." They are companion pictures, and both show two little country girls mounted bare-back on a docile looking pony. They are both very well photographed.

Oscar Foss.—We have received from Mr. Oscar Foss, dealer in photographic supplies, at 841 Mission Street, San Francisco, Cal., a very pretty illustrated calendar for 1893.

Mr. Foss shows his usual enterprise in issuing this tasteful calendar, which will surely be preserved and put into use wherever it is sent.

Mr. Geo. G. Cantwell, of Colorado Springs, has sent a very excellent moonlight photograph, a view of a mountain range with Pike's Peak in the distance. There is no sham about this picture, as can be seen at the first glance.

Light, that of the full moon; exposure one hour with a Waterbury Detective upon a Stanley plate.

This moonlight picture is another triumph of the little Waterbury hand camera, for the exposure is full, and the main part of the picture thoroughly developed.

Record of Photographic Patents.

489,512. Plateholder Attachment for Cameras. Byron L. Turner, Pittsford, Mich.

489,713. Photograph Exhibitor. Robert H. Nelson and Thomas H. Temple, Ridgeway, Mich.

TRADE MARKS.

22,274. Photographic Preparations. J. Hauff.

READY FOR BUSINESS.

"When a street-car company fails it can start to go into the photographing business."

"How is that?"

"It has plenty of 'spotters' to begin with."

Queries and Answers.

10 FLOYD PECK.—1. Will you please let me know through THE TIMES whether it makes any difference if common alum instead of chrome alum is used in the acid fixing bath, as Carbutt's, Cramer's, etc.?

2. *Where is the lens for sale called the Rodenstock Bistigmatic*, described by you?

10 *Answer.*—1. Chrome alum is a better hardener than common alum, but the acid fixing bath itself solidifies the film.

2. The Scovill & Adams Co. may be able to supply the Rodenstock lens later. At present there is not sufficient demand for them to import them.

11 A. B. C.—Why must albumen, the white of eggs, when used for photographic purposes, be beaten into froth? Please answer.

11 *Answer.*—Albumen exists in little cells; they are enclosed by membranes. When beating albumen into froth these membranes are broken and set it free. After the froth is settled the clear and transparent liquid is pure albumen, and the frothy scum floating on the surface consists of the membranes.

12 BEGINNER IN PHOTO-ENGRAVING sends several negatives, reproductions of line work. They are intense enough, but not clear in the open parts, and what puzzles him most, is, that notwithstanding all his care and attention in taking focus, the lines are not sharp, they are fuzzy and ragged.

12 *Answer.*—We advise our young friend to hire an experienced collodion operator to make negatives for process work. It will be cheaper in the end to do so, and there will be less vexation in his reproduction atelier than there seems to be now.

The negatives we inspected are of sufficient intensity. The yellow stains in the open parts are caused by hypo, not perfectly eliminated from the film before the mercurial intensifier was applied. Instead of with mercury intensify with nitrate of lead and red prussiate, and if certain portions of the plate assume yellow color, give it a wash with a dilute solution of cyanide of potassium. Should the whole of the plate or parts of it turn slightly blue, no harm is done unless transparency is impaired. The want of sharpness is the result of over-exposure.

Collodion plates for process work must not be fully exposed, but considerably under. Intensity is produced by subsequent operation. A normally exposed and developed plate and intensified afterwards will show the ragged and fuzzing edges you complain of. Expose long enough to have the developed negative a trifle more dense than an ambrotype or collodion positive should be. And then you must not use cadmium or magnesium haloids in your collodion, they tend to gelatinize and produce the ill effects complained of. With ammonium or with potassium iodide and bromide there is no fear, when all other conditions are what they should be.

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"*Gentlemen:* I think it ('The Chemistry of Photography,' by W. Jerome Harrison) one of the most valuable of your series, and congratulate you on having added it thereto.

"Sincerely yours, C. W. CANFIELD.

"NEW YORK CITY, Jan 5, 1893."

THE CHEMISTRY OF PHOTOGRAPHY, BY W. JEROME HARRISON.

WHAT IS SAID OF IT.

"IT is a valuable work for all classes of practical photographers. A careful study of it will tend to more direct methods in experimental photography, and save much time on the part of the operator, by showing in advance, that nothing can be effected by many of the proposed investigations. The successful photographer should understand the chemistry of his work, or he must follow more or less in the footsteps of others."—S. W. BURNHAM.

"IT is at this date, what 'Hardwich's Chemistry of Photography' was thirty odd years ago, unquestionably, the best book of the kind published, and no photographer's library should be without it. This, and 'The Times' Annual for 1893,' are two grand volumes "—W. H. SHERMAN.

"I THINK it one of the most valuable of your series, and congratulate you on having added it thereto.—C. W. CANFIELD.

ANOTHER BATCH OF TESTIMONIALS FOR "THE ANNUAL."

Full to Overflowing.—"The 'Annual' comes to us this year full to overflowing with good things. It is, if possible, better than ever."—*The Canadian Photographic Journal.*

"**It is an excellent production** and a credit to your house, and deserves commendation from all that see it."—H. B. BATTLE, Director N. C. Agricultural Experiment Station, Raleigh, N. C.

"**It is truly a work of art,** and I consider it a valuable addition to my photographic library, and as a standard book of reference as well."—W. S. WATERBURY, Greenwich, Conn.

Improves the Pace.—"I want to say that I think it even improves the pace it took at the outset. It has within its covers many articles that no photographer, whatever grade, can afford to overlook."—GUSTINE L. HURD.

All the Tables, Formulas, etc., have been thoroughly revised by experts, and have been brought up to date with many additions of new and important matter.—*Boston Globe.*

"**It will be** a continual source of pleasure to look at the beautiful illustrations which in their abundance and excellence, make the work a more valuable acquisition to all who may be so fortunate as to possess it."—XANTHUS SMITH.

As an art publication nothing in the line of photography and but few books in any department are worthy to be compared with this splendid Annual and Almanac. To photographers of every class, amateur or professional, who have either pride or ambition in their work it is simply indispensable.—*The Saratoga Sun.*

The advance copy of "The American Annual of Photography and Photographic Times Almanac" for 1893, published by The Scovill & Adams Company, has just reached us. "Handsome," "beautiful," "valuable," or even more expressive words are as inadequate to convey an intelligent idea of the work, as a trip to Mendota would impress one with the metropolitan character of the great city where this work is published. It is no wonder the publishers, laden with the burden of snch a great work, are made to say, it would seem almost despairingly, "with every succeeding issue of such a book, the work of preparation becomes more arduous." A work of about 400 pages exclusive of advertising matter, a hundred and twenty-five different writers giving an exhaustive treatise, on as many different subjects; interspersed are twenty-seven engravings which are more than representations of the engravers' skill, they are delightfully artistic and interesting studies. Can you afford to be without such a work?—*The Tripod.*

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H. W. BELKNAP, 50 Beacon St., Boston, Mass.

PHOTOGRAPHERS, see advertisement of Woolford & Sinn, page viii., in regard to albumen enlargements, and double your business.

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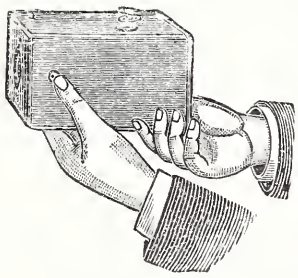
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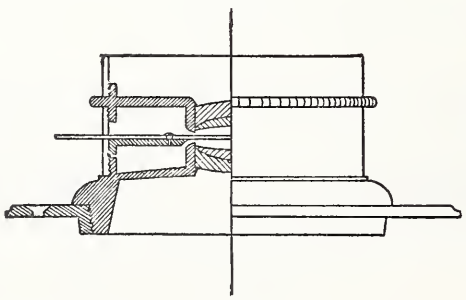
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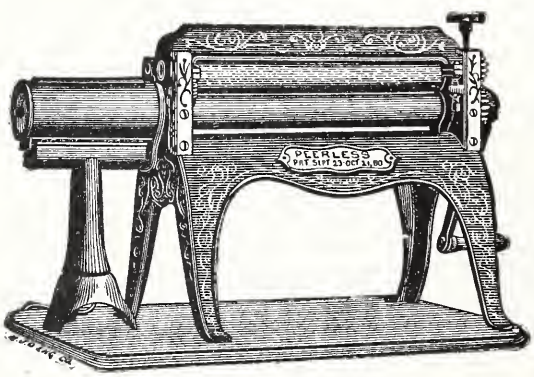
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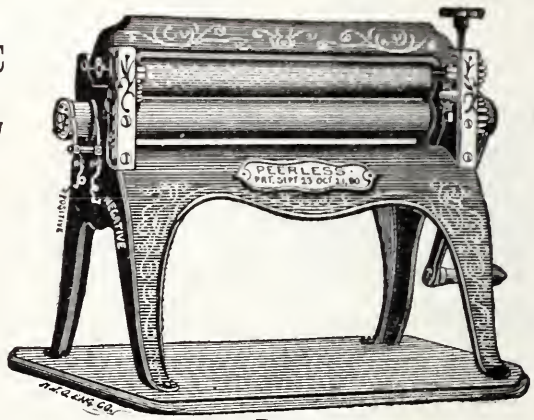
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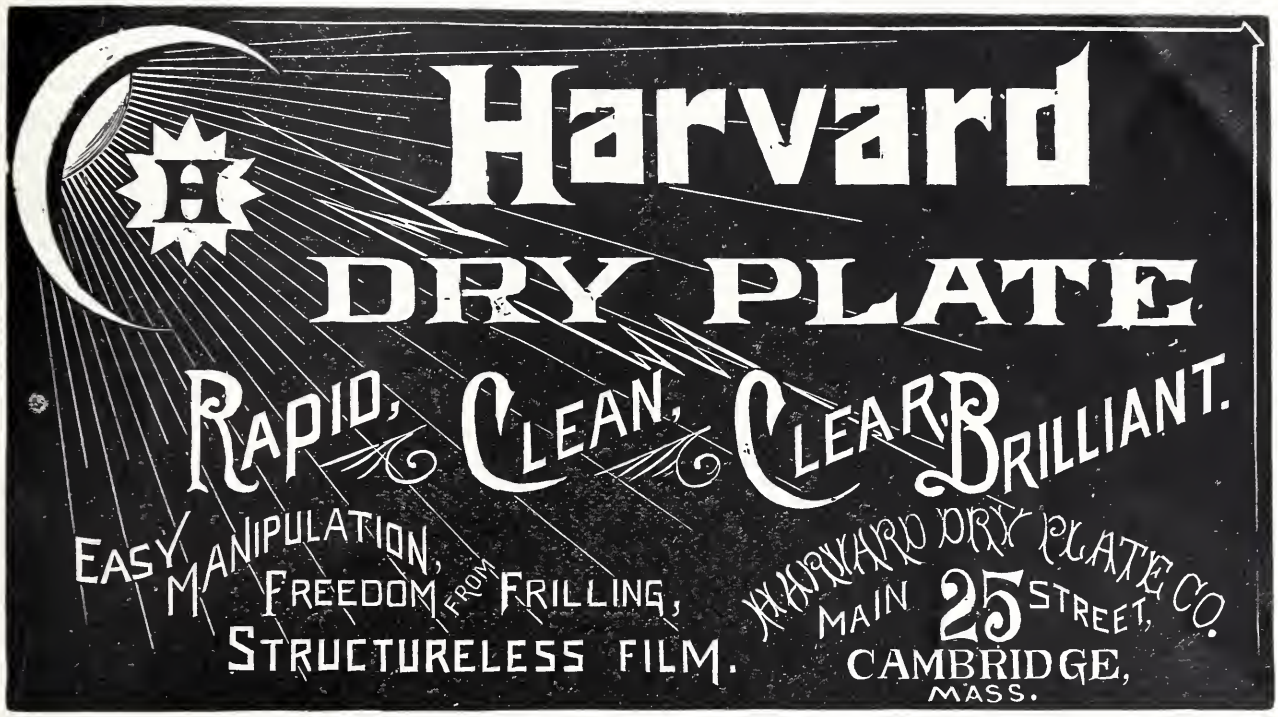
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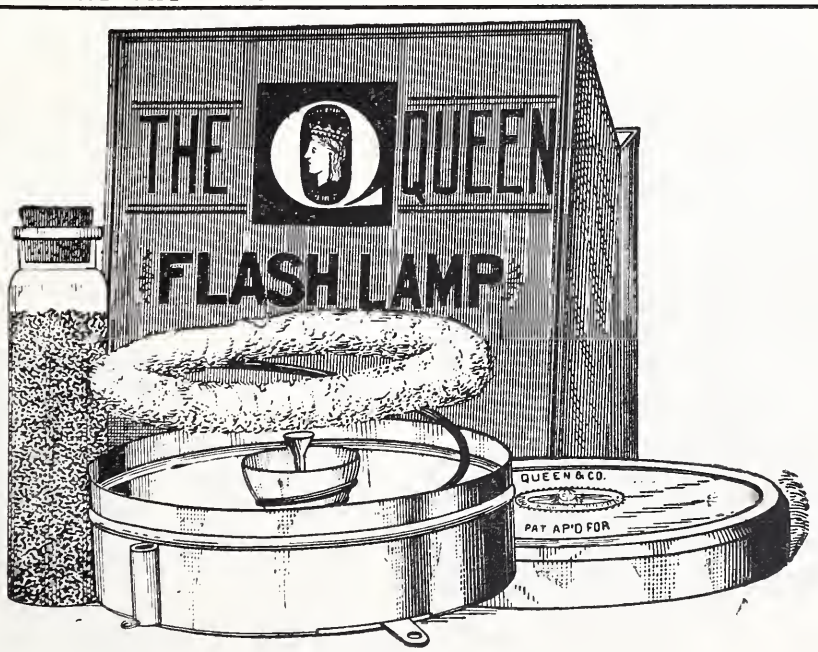
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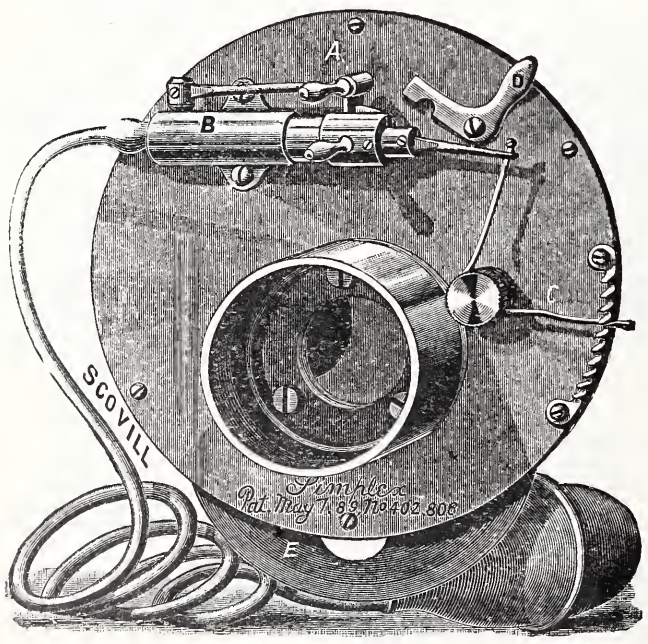
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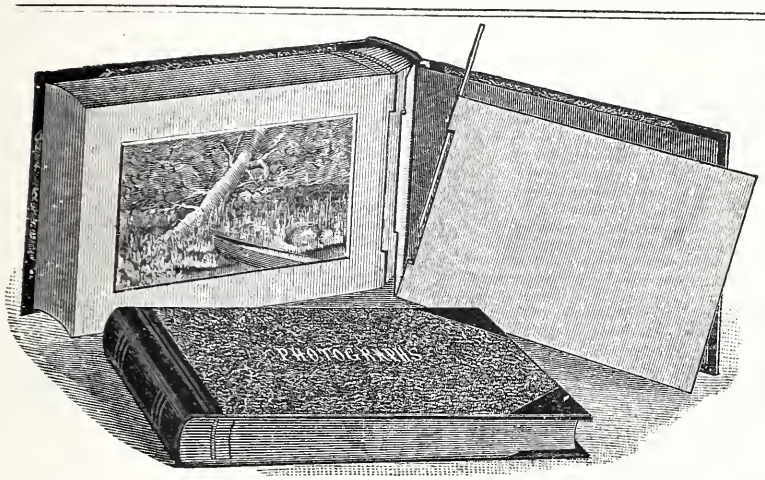
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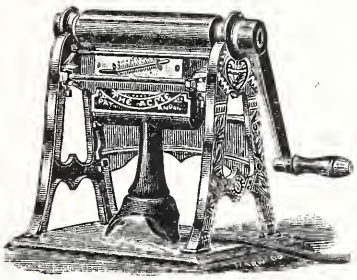
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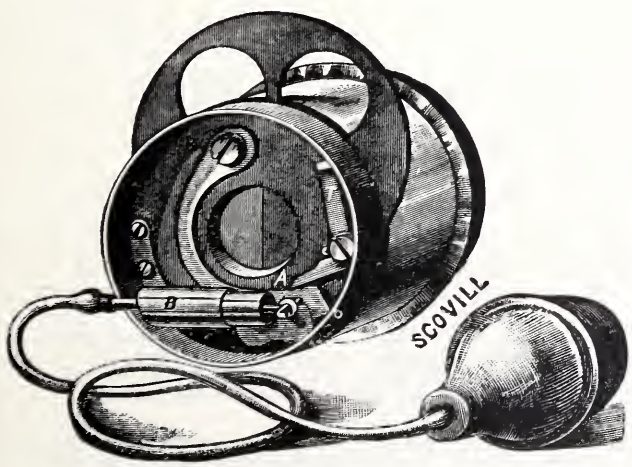
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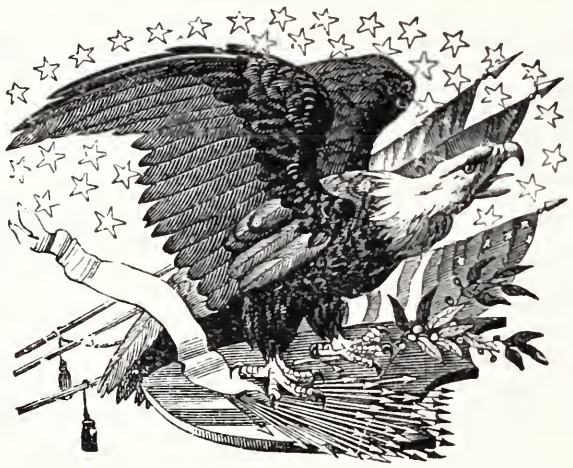
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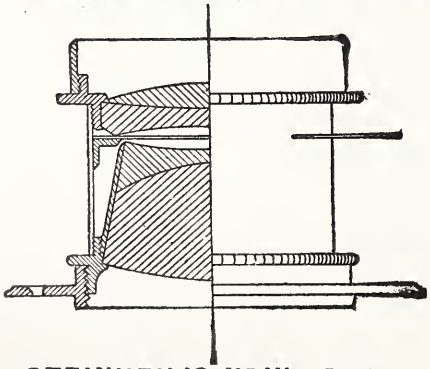
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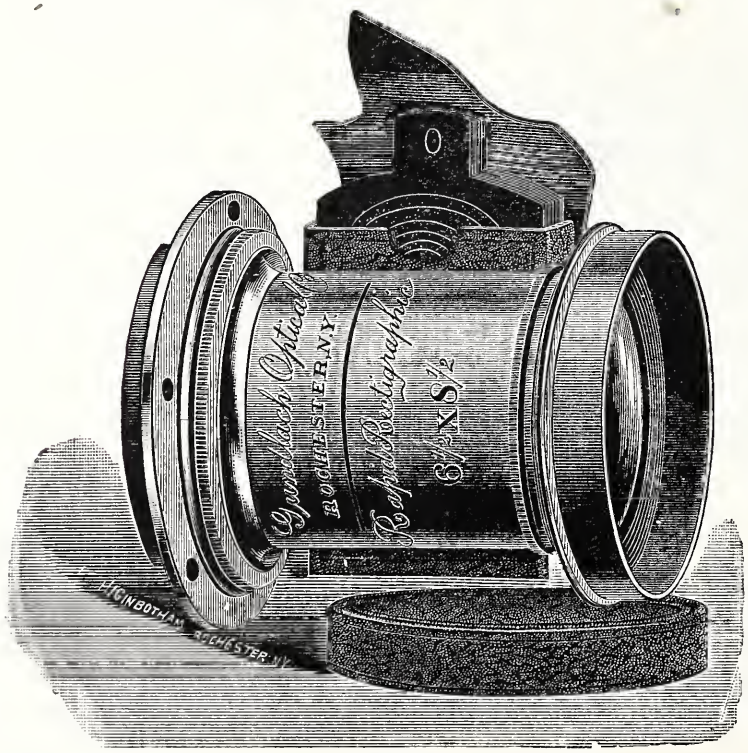
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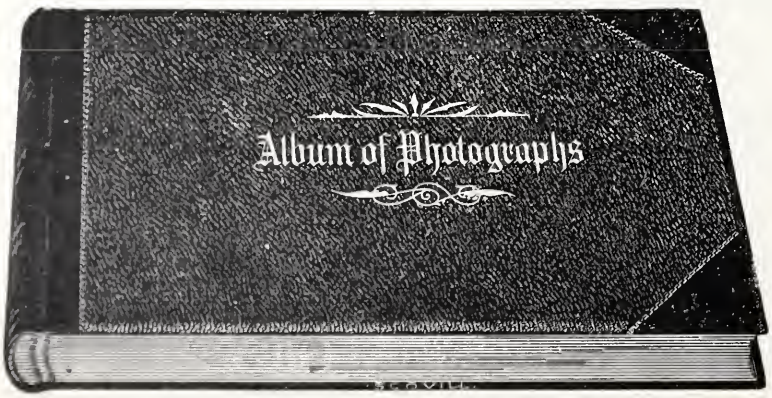
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(OVER.)



PORTRAIT OF A LADY.

James L. Breese, Photo.

N. Y. Photo Gravure Co.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JANUARY 27, 1893. NO. 593.

THE PORTRAIT OF A LADY.

WE present our readers this week with another portrait by Mr. James L. Breese. The Portrait of a Lady is treated similarly to his Portrait of a Girl which embellished these pages several weeks ago, and shows what an amateur can do in the difficult branch of portraiture by the simple accessories and lighting opportunities to be found in a home.

In ease of pose and effectiveness of lighting, the Portrait of a Lady will favorably compare with the best work turned out by our contemporary professional portraitists.

ON NEW DEVELOPERS.

THE lamented Dr. Paul Goddard, of Philadelphia, one of America's foremost pioneers in photography, and a successful amateur, asserted some 40 years or more ago that sensitive silver haloids combined with a suitable carrier should give a developable image by exposure to light for a very small fraction of a second. The many efforts made at that time to accomplish this task, and those of later years made by adding certain substances to the ferrous sulphate developer were fruitless, and the highest sensitiveness attainable remained as heretofore the attribute of a correctly compounded collodion and a silver bath of such constitution as to permit harmonious working. Alum, oxalic acid, oxalate saccharine and a variety of other substances grasped indiscriminately, and, added to the developer, had in fact not as good effects as those obtained by Dr. Goddard with ferrous nitrite, which however for chemical reasons could not become a practical developer.

It was left to the emulsion processes and alkaline development to realize that beau ideal of early photographers.

The history of photographic developers is of highest interest to the student, and by reading its pages carefully one will learn of the enormous progress made in photography, and which will convince the skeptic eventually that photography is a science indeed. Remarkable to say the very first developing agents have been retained to the present time, and ferrous oxalate and pyrogallol are still the watchwords of German and French, or American and English professionals. In course of time new developers have sprung up, and many of them organic compounds, of the ortho and para series of carbureted hydrogen. To all of them have been ascribed enormous energy, and justly so to some, reducing time of exposure to such a mininum as Dr. Goddard's most audacious dreams could but imagine.

All old practitioners were astonished when eikonogen was first brought among us, and when by its means images were developed which on account of but limited exposure would not yield a printing negative by any other means. Since then other agents have been brought forward, and others again of still more alleged energy are looming up on the horizon.

Scarcely had we become conscious of the enormous power of para-amidophenol whether employed as a base, a salt, or in more complicated compounds, when other developers claiming still greater energy were proposed.

One of them, diamidophenol, known in Germany and America as amidol, has been enthusiastically received by all, its fine properties have become known and there is no reason to dwell upon it on this occasion.

Another substance, para-oxyphenylglycine, abreviately called glycine, was introduced about the same time, but it appears has not generally justified what has been claimed for it.

Methol, or properly speaking methol-para-amidometa kresol, also a derivation of para-amidophenol, has been pronounced to be of highest efficiency

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and seems to have taken preference over other similar carbon compounds. Dr. A. Meydenbauer, when describing his method of developing photo-grammetrical plates in vertical position, mentions methol incidentally, and assigns it to a high position among all developing agents. Eder, Stolze, Scolik, and other Germans of high authority speak equally favorably of it.

Amidol surpasses methol in some respects, especially in energy, nevertheless methol-developed negatives are of proper intensity and of absolute clearness in those parts of the plate not affected by light.

Methol develops the image slowly but surely, intensity builds up gradually the same as with pyrogallol, and for that reason alone should methol be employed for all work that needs not to be hurried. The almost interminable durability of methol in solution is greatly in its favor. All other developing agents, whether in pure solution, or when mixed with alkalis will deteriorate, in consequence of becoming oxidized on exposure to air, they turn yellow and brown, and with the change of color their energy ceases. Such need not to be feared with methol; it remains intact for a longer time than any other developer known.

The amount of alkali added to the solution influences the degree of intensity of the negative resulting. The more alkaline the solution the less will be intensity, and *vice versa.*

Dr. Stolze and F. Schmid give us the following formulas, which we can approve of by our own experiments:

A.

Water	20 ounces
Sodium sulphite	5 ounces
Methol	75 grains

B.

Water	12 ounces
Potassium carbonate	3 ounces

To 3½ ounces of water add 1 ounce of A, and of B ½ an ounce, or less or more as exigency may demand.

A

Water	12 ounces.
Potassium metabisulphite	1½ ounces.
Methol	½ ounce.

B

Water	12 ounces.
Potassium carbonate	3 ounces.

Mix 3½ ounces of water with 6 drachms of A solution, and of B the same quantity or more or less of it as suitable to the exposure.

The image appears rapidly. To obtain full intensity the plate must remain in the solution as long as with pyrogallol, but as the solution remains perfectly intact almost interminably, and oxidation products cannot possibly injure the film of gelatine, a perfect negative is only a matter of time, of a few minutes to say the least.

For the developing of bromide prints no better medium than methol has yet been proposed. On account of its durability when in solution, and its strong resistance to oxidation the development of very large prints, or of many small ones at one time is easily and successfully accomplished.

While the above given formulas may be considered a standard for the developing of negatives, these solutions should be diluted with from 6 to 8 volumes of water when it is the object to develop prints upon bromide of silver paper.

FOREIGN NOTES.

THE PHOTOGRAPHIC SOCIETY OF JAPAN, of which our friend and contributor, Professor W. K. Burton is Secretary, has issued a report of the meeting, which makes very interesting reading. It shows a membership of 135, including both natives and Europeans. His Excellency Viscount T. Enomoto is President, and there are six Vice-Presidents, four natives and two Europeans. The Society also has a Japanese Secretary, and two Treasurers, a Jap and an Englishman. At the end of the report we find the same in the native language.

THE INTEREST IN LANTERN SLIDES in England by no means seem to be diminishing. In fact, if we may judge by the number of articles in the English journals on subjects connected more or less intimately with the Optical Lantern, and also by the publications devoted expressly to this subject, we should say that lantern-slide making is becoming more popular in the United Kingdom every day. Some time ago we noted in these columns the inauguration of a Magic Lantern journal, a monthly, published by the Messrs. Taylor Bros., which has, to all appearances, been very successful. Now the weeklies are starting Lantern Supplements. The *Amateur Photographer* calls its Supplement "Our Lantern Screen," and publishes four pages monthly of very interesting matter. *The British Journal*, not to be too far behind the times, publishes also a Lantern Supplement entitled "The Record," once every month.

MR. JONATHAN FALLOWFIELD, who is the English agent for "The American Annual of Photography and Photographic Times Almanac for 1893," reports that more than 10-12ths of the entire Eng-

lish edition was sold before the book was received. This certainly speaks well for the reputation of the work on the other side. The English edition this year was 5,000 copies.

The Journal of the London Camera Club for January contains an illustration presented by Col. Stewart as an example of the work of the Panoram — a panoramic view representing the houses of Parliament, Westminster Abbey, etc.

The *Photographic News* for January 6th contains a pictorial supplement in a pleasing sepia tint from a negative by Mr. Bergheim. It is a Portrait Study, entitled "Margery," and gives a decided art feeling to the entire number. Our friend and contributor, Mr. H. P. Robinson, begins a series of "Rambling Papers" in the same number, and there is an article by our colleague, Mr. P. C. Duchochois, also in the same number on "Diapositives."

"Hard Up."—The Editor of the *British Journal of Photography* was evidently "hard up" for a subject for his editorial when, in the issue of Jan. 6th he resorted to a description of a frontispiece in a contemporary for his leader. In the same number, over a *nom de plume*, he goes out of his way to dilate on a printer's blunder in another contemporary; an error, by the way, which was corrected in the following number, and therefore must have been seen by him before writing the note referred to; but when the devil (printer's) calls for "copy" something has to be written without delay.

A New Publication in England is entitled, *The Optician and Photographic Trades Review*. It is published weekly, and is devoted to the optical, photographical, electrical, nautical, philosophical and mathematical instrument industries. It has for its motto, the dying words of Goethe, "More light, more light."

PROF. EHRMANN'S COMBINED TONING AND FIXING BATH.

So much interest has been manifested in this excellent toning bath by Prof. Ehrmann, and the frequent requests for the number of The Photographic Times (Sept. 2, 1892) which contained his description of it having exhausted the supply of that issue, we reprint it here, somewhat abridged, in compliance with a large number of requests:—

While conducting the practising class of Chautauqua School of Photography during the present extremely hot summer, it was found that the bath as originally prepared worked with much greater energy, and whereas during last winter it took from fifteen to twenty minutes to tone and fix thoroughly chloride of silver gelatine paper prints, toning was completed within four or five minutes, evidently too short a time to secure a perfectly fixed proof. To prolong toning, the chloride of silver of the original formula was left out; toning proceeded much slower in the beginning, without, however, rendering the tone as agreeable as with silver, and without the whites being as brilliant and pure as formerly. E. Valenta's formula for a reliable combined toning bath (see The Photographic Times Vol. XXII., page 343) appeared quite *à propos*, and it was concluded to give it a trial. The author's opinion, that when alongside of the formation of sulphide of silver, gold is also substituted for a portion of the metallic silver of the print, the result is permanent for all practical purposes, appeared reasonable and convincing enough to give the bath a trial. The formula is as follows:

Water	1000 cm.
Hyposulphite of sodium	200 gm.
Sulphocyanate of ammonium	25 gm.
Nitrate of lead	10 gm.
Alum.....	20 gm.

The bath is diluted with an equal volume of water, and to each 200 cm. added from 7 to 8 cm. of a 1 per cent. solution of chloride of gold. With all that has been said in favor of the bath, it has not worked satisfactorily in my hands. In the first place, there is far too much lead in it. Bradfisch & Pierce's improved chloride of silver gelatine paper of decided acid reaction tones in it to a bluish-gray color within less than four minutes. After subjecting from fifteen to twenty 5 x 8 prints to 24 ounces of the bath, it became frothy and thickish, toning proceeded still more rapidly, the gelatine film appeared to be in a state of dissolution, and after the washed print had been squeegeed upon glass, ebonite or tin-type plate, it adhered tenaciously and refused to strip off under any circumstances. Reducing the quantity of lead to one-fourth, one-sixth, and one-eighth prolonged the process of toning, but all other effects remained the same. Explanation to a part of the difficulties encountered was found in a recent number of the *Photographisches Archiv*, where it is stated that nitrate of lead, and still more so sulpho-cyanate of ammonium, is a powerful solvent for gelatine when at a temperature of 20 deg. C. (68 deg. F.).

Experiments have proved Herr Liesegang's assertions to be perfectly correct, with the exception, perhaps, that with the presence of lead nitrate and

sulphocyanate of ammonium gelatine dissolves at still lower temperature than stated.

With these several experiments the practicability and reliability of the Valenta bath had become more than doubtful, and a reconstruction or modification of our old bath was resolved upon. Keeping in view what Valenta had said of toning with lead and simultaneously with gold, and that slow toning only can secure perfect fixing, I compounded a bath that has so far answered all possible demands. The tones produced are agreeably warm, the whites pure, not tinged yellow, fixing appeared to have been perfect, and a reasonable permanency of the print is hoped for.

Dissolve one pound of hypo in 32 ounces of water and 3 ounces of alum in 32 ounces of water. Allow to settle, heat to 120 deg., filter and add 22 grains of nitrate of lead. To 20 ounces of this solution, add 5 grains terchloride of gold dissolved in two ounces of water. With 20 ounces of this solution fifty 5 x 8 Bradfisch & Pierce's emulsion paper or an equivalent of larger or smaller dimensions, can be toned and fixed to perfection. After toning this number of prints the gold is exhausted, and the bath should not be used any longer. A well-printed-out picture tones in from 12 to 15 minutes, sufficiently long to secure a thoroughly fixed print. When the tone of the picture begins to look purplish by transmitted light, no matter how the color may be in reflected, remove it at once in *running* water and continue to wash for about one hour, when the print may be dried or squeegeed. There is alum enough in the solution to harden the film, without resorting to an extra tanner, and carbonate of sodium before or after toning and fixing is not at all necessary. The finished prints have a beautiful deep purple color and the whites are perfectly clear.

DEVELOPING IN COLD WEATHER.

I HOPE you can allow me space in your valuable paper for a few words on this subject—that some other poor amateur like myself may be made to see light (in his prints).

Ever since the cold weather has set in I have been troubled by getting miserably poor thin negatives, without any apparent reason—for I thought I had mastered to quite a degree the art of exposure and development—and I laid the matter to weak sunlight. But when I was obliged to give a short time exposure in *sunlight* on a Seed 26 plate and then not get a good black negative, I concluded there must be a reason for it.

I use the pyro developer, and remembering my experience with hydroquinone in having to be so particular about the temperature, I concluded that it probably affected pyro more or less in the same way, so I made some quick shutter exposures, in fair light, and instead of developing them in my cold dark-room in the cellar, I developed them at night near a warm fire, and also heated the water and the dish sufficiently to take the chill off.

The results surprised me; the image appeared in about five seconds and was fully developed in five minutes. Any one having this trouble must try a warm development, and with a good pyro developer (the one sent out with the Eastman's films I find excellent for instantaneous work), a snap-shot negative can be brought out so black as to be "mean"—to use the beautiful language of the street.

Geo. G. Cantwell.

PHOTO-SCRAPS.

I WAS talking with Mora yesterday. Mora, the Great, who made reputation and renown behind the camera, and who has been making money faster since he left the photographing business than he ever did in it. By the way, how is this for an exception to the advice so often given to young men starting out in a business life? The wiseacres say: "Young man, find out what occupation you are adapted to, and stick to it."

Surely Mora was adapted to the life of an artist, (for such a photographer *is* an artist). Who has ever succeeded in surpassing the output of the Mora gallery in posing, lighting and general artistic effect? and yet, if money-making be the criterion of business success, Mora is more successful now than in the old days. Look, too, at Montgomery, genial old "Montie," who was Mora's right-hand man both in sky-light and dark-room. If he had not been especially adapted to the work would Mora have retained him so long in his most exacting work?

And yet old "Montie" with his solemn face is floating about among the fraternity, descanting upon the virtues of Seed plates (not a difficult thing to do, by the way) and abundantly successful in his efforts. Well, this is an aside, and not to the point, except that I wish to remark, "Be sure you're right, young man, and then go at something else." Well, Mora said, "These amateurs amuse me. They are so rich in theory, they can talk chemical changes, color values, equivalent foci and

spherical aberration all day long to the utter silencing of any professional, and then go out and spoil plates," and it is a fact that nearly every amateur is long of theory and fearfully short of practice.

One point especially is neglected by amateurs in portraiture, and that is, lighting. They will, as a rule, attend carefully to every detail of lens, and box, and plate, and chemical and exposure, and utterly neglect the lighting of the sitter. It is not my purpose to give any directions; I am only growling. Amateurs are good in their way; they do a lot of thinking and experimenting, and then exploit their results, often valuable, and as the professional need only read up and pick out such results as his experience tells him are reasonable, the pyro-stained "profesh" are saved much time and brain work. Why, I believe it was an amateur who first suggested the double coat as a means of avoiding halation.

Mac.

TRIPLE-EMULSION PLATES.

Who First Suggested Them?

In The Photographic Times of December 30th, the editor alludes to the improvements of Mr. Ed. Wuestner in the manufacture of so-called "non-halation plates." It is a matter of considerable interest to me that the expression of Mr. Wuestner has confirmed the expectations expressed in my communication published in these columns, December 16th, page 640. Both the improvements carried out by Mr. Wuestner—the use of "orthochromatic" emulsions and the mixing of emulsions of differing degrees of sensitiveness—were I believe, originally proposed by myself, and were clearly indicated in the article referred to. I deem this a matter of sufficient importance to insist upon a recognition of my claim to priority of invention; for I believe that my original idea of mixed emulsions, which is much older than the Sandell plate, is destined to be of very great value in the near future.

At the present moment I do not know positively when the idea first occurred to me, but it was certainly not later than the Autumn of the year 1888. Fortunately although I did not publish it at the time, the fact was recorded in my notes and it has recently appeared in print among some abstracts from those notes, which were written up last summer, as a contribution to "*The International Annual of Anthony's Photographic Bulletin*," 1892 (pp. 178-181).

If the reader will turn to that volume he will find, that the prevention of halation by staining the film is therein referred to, but not with entire favor. The important reference however is in regard to the plan of mixing emulsions, and the wording is thus:

"There are various expedients that I have thought of as suggestions for improving them (color-sensitive plates); one of the most promising, and one which has been in my mind for a number of years, is to prepare two, or perhaps three, different emulsions, each sensitive to certain regions of the spectrum, and mix these together."

It is only the lack of proper facilities for experimental work of this kind that has prevented me from putting these suggestions to a practical test. Had I done so, the Sandell plate would have been anticipated by something much better, on this side of the water, long ago. I claim priority for the suggestions here expressed, and while the same ideas may have occurred independently to Mr. Wuestner and to others, I believe my MS. sent to the "International Annual" six or eight months since entitles me to the claim of priority also in publication.

The name "non-halation" plates is not only awkward, but it is at best "a negative designation" of the qualities of a plate, and does not by any means express the more valuable characteristics of the new plates. It would be better to designate plates made like the Sandell plate as double or triple-coated plates, and those made by mixed emulsions as double or triple-emulsion plates.

Romyn Hitchcock.

Washington, D. C., Jan. 13, 1893.

PHOTOGRAPHIC SURVEYING WITH THE ORDINARY CAMERA, SOMETIMES CALLED "PHOTOGRAMMETRY."

At the risk of presenting information already possessed by the reader, I offer by request the following synopsis of photographic surveying with the camera ordinarily used for landscapes.

It should be an interesting subject to landscape photographers when it is observed that if the sensitive plate is vertical and the optic axis horizontal, a map of the country embraced in the photographs taken under these conditions can readily be made from the photographs.

The ordinary field camera may be used if furnished on its upper surface with two levels at right angles to each other for leveling the camera before exposure, and with two "horizon points" so

attached to the middle points of the vertical edges of the inner frame as to project slightly in front of the exposed plate, and which mark on the negative by their obscuration of the light the extremities of a horizontal line that can thereby be afterwards drawn upon either the negative or the print taken from it. A pocket compass, or one attached to the camera, is also needed to determine the direction of the optic axis during the exposure.

A photograph thus taken is a plane perspective with its horizon marked and its point of sight, or principal point, located at a distance from the plane, or face, of the picture equal to the principal focal distance of the lens—the usual focal distance for landscapes.

It is evident from the foregoing that lines joining the principal point and different points of the picture correspond to the visual rays joining the photographer's station with corresponding points of the landscape, and that the angles included or limited by like lines in the two cases are equal.

A condition, mainly of importance in the measurement of heights, is that in what precedes, the optic axis and "horizon points" are presumed to be in the same horizontal plane, and the right line joining the latter is the normal horizon. If the optic axis is raised or lowered by raising or lowering the lens, the horizon of the picture will ascend or descend an equal distance, therefore a line parallel to the normal horizon and at a corresponding distance above or below it, which may be measured on a scale attached to the objective slide, will be the true horizon.

The simplest method of using photographs for the construction of a map, or plan, is that of intersections, as in the use of the plane table. Given a photograph taken under the foregoing conditions: Lay it upon a smooth flat surface and join the images of the "horizon points" by a fine penciled line. This is the normal horizon of the picture. Mark with numbers 1, 2, 3, etc., the different points of the photograph to be represented on the map, and connect these points by perpendiculars with the horizon; the points of meeting with the latter are called the projections of 1, 2, 3, etc., and may be designated 1′, 2′, 3′, etc. Draw a right line perpendicular to the horizon at its middle point, and on it set off from the horizon the actual principal focal distance; the outer extremity is the point of sight, which call O. Now if O were joined to 1′, 2′, 3′, etc., by right lines the included angles would be the true horizontal angles pertaining to corresponding points, the same as if measured by a transit; but these angles are not needed in the method under consideration.

Suppose, for the same landscape, two exposures made from different stations, S and S′, at a known distance apart called the "base." On a sheet of paper assume a N and S line on the paper, and to a convenient scale, say, 1 inch on the paper to 100 yards on the ground, draw a right line to represent the "base"; its extremities will represent S and S′ as well as the points of sight O and O′, by which they may be designated. Then from O draw a right line in length equal to the principal focal distance, in a direction corresponding to the compass bearing of the optic axis as determined at S; and, at its outer extremity draw a right line perpendicular to it to represent the projected horizon of the photograph; transfer the points 1′, 2′, 3′, etc., from the horizon of the photograph to this projected horizon, using the angular point as the middle point. Perform a like operation at O′ with the photograph taken from S′; then right lines drawn from O and O′ through corresponding points of the two projected horizons will intersect in the required points of the map.

If an exposure is made at a third station embracing the same features, it is readily seen that a check may be had upon the accuracy of the work.

Once the plan is thus obtained, the distances to points are known from the map, and a simple calculation gives the heights, which may also be obtained mechanically by a process that the space prescribed for this article prevents explaining.

To obtain these results, marking of the photographs may also be avoided; so that, when the work is done, there are, besides a good map of the country, the photographs themselves to supply any information which otherwise only an actual observer of the ground could give.

Henry A. Reed,
U. S. Army.

ON SILVER HEMISULPHATE.

(*Continued from page* 30 *and concluded.*)

ALL the specimens of this new substance contain a little phosphoric acid which cannot be removed. Reckoned as phosphoric anhydride it amounts to a little over 2 per cent. Three determinations gave respectively, 2.30; 2.09; 2.18, mean 2.19.

It is apparently united with silver, and this silver phosphate is united so firmly with the double sulphate that it cannot be detached. If it were not so united it would be dissolved in the nitric acid with which the substance is three times treated if it were normal phosphate, and if it were hemiphos-

phate it would be converted (if in a free state) to normal phosphate and dissolved.

Another attempt to remove this phosphate was made by heating the substance with sulphuric acid to 100 deg. C. for ten hours, followed by copious treatment with boiling distilled water to wash out the sulphate which it was hoped would be formed at the expense of the phosphate. It seems difficult to believe that a silver phosphate could resist this treatment, but a quantitative determination showed that the proportion of phosphoric anhydride is not even diminished by it.

Other modes of formation than those described here were experimented on with the view of obtaining the substance free from phosphate, but without good result.

It is possible that the silver phosphate may be combined in definite proportions, and the approach to uniformity of composition somewhat favors this idea. But such a view would require the assumption of a large, perhaps too large, a molecule.

ANALYSES.

A.

Material prepared from silver carbonate and dried at 100 deg. C.

	(1)	(2)	Mean.
Ag	76.13	76.75	76.44
O	3.29		3.29
P_2O_5	2.30	2.09	2.19
SO_3	16.19	16.47	16.33
Water	1.78		1.78
	99.69		100.03

B.

Material prepared by various other methods considered less reliable.

DETERMINATIONS.

A per cent.	P_2O_5	SO_3	O
78.59			3.93
78.45			3.69
77.16			3.61
75.43	2.18	15.61	3.29
75.46			3.25
75.35	1.77		
Mean 76.74			Mean 3.55

The determinations of phosphoric and of sulphuric anhydrides are placed opposite the silver determinations to which they belong. The oxygen determinations are distinct.

The most reasonable interpretation of these results is that we have to do with a double sulphate of silver hemioxide and protoxide in which a portion of sulphuric acid is replaced by phosphoric. The proportion of phosphoric acid seems to be nearly constant, three concorant analyses having given 2.09, 2.30, and 2.18, with a mean of 2.19. These proportions may be expressed by the formula :—

$$7(Ag_4SO_3Ag_2SO_3H_2O)+Ag_6PO_4Ag_3PO_4.$$

The comparison of this formula with results obtained is as follows :—

	Calculated.	Found (Mean).
Ag	76.78	76.44
SO_3	15.67	16.33
P_2O_5	1.98	2.19
O	3.80	3.29
H_2O	1.76	1.78
	100.00	100.03

This large molecule results from the relatively small proportions of P_2O_5, and although the figures obtained for phosphoric anhydride are very concordant, it perhaps is better to consider the substance as a double sulphate in which part of the sulphuric acid is liable to be substituted by phosphoric. If the silver phosphate is taken as adventitious, the formula becomes simply Ag_4SO_4. $Ag_2SO_4H_2O$.

Decompostions.—The action of alkaline hydroxides is confirmatory of the above conclusions, and also offers further proof of the great stability of the substance.

When the double salt is placed in contact with excess of dilute sodium hydroxide it blackens, being converted into a mixture of the hemioxide which is intensely black, and the normal oxide. This decomposition, however, takes place much more slowly than with the salts of the protoxide, so that (unless heat has been applied), if after ten or fifteen minutes the alkali is poured off and the oxides are dissolved with dilute nitric or sulphuric acid, a considerable residue is found of the red-brown double salt which had escaped decomposition.

With continued treatment with sodium hydroxide (that obtained from metallic sodium was used as being absolutely free from chlorine), the decomposition is complete.

The oxide thus precipitated was thoroughly dried at 160 deg.–170 deg. C., weighed and ignited. Five determinations of oxygen from various specimens gave 4.73; 4.63, and again 4.24; 4.19; 4.17 per cent. of oxygen respectively. A salt with the constitution already described should yield one molecule each of hemioxide and of normal oxide, and this mixed oxide should contain 4.68 per cent. of oxygen. We have then :

	Mean of 5 Determinations.	Calculated.
Oxygen per cent.	4.39	4.68

The double salt is more readily decomposed by hydrochloric and hydrobromic acid, or even by

alkaline chlorides or bromides. Under their action it instantly blackens. That part of the silver that exists in the form of hemisulphate is converted into black hemichloride or hemibromide. The extreme instability of these hemihaloids causes them spontaneously to resolve themselves into metal and normal haloid. They rarely remain as hemihaloids for more than an hour or two, and often for much less time. The change is often quite sudden, and is easily observed by the alteration of color, the black of the hemihaloid passing into the metallic gray color belonging to a mixture of normal haloid with metalic silver. The hemibromide seems to be little less unstable than the hemichloride.

This instability does not render an analysis impossible, since both the products of the change are insoluble; but renders it somewhat more difficult, as the freshly-formed silver haloid tends to run through a filter. Sometimes, indeed, it seems as if traces of the silver chloride were for a few moments soluble in water with a yellow coloration. The appearance of this yellow color in the water is apt to be the first indication of the splitting up of the hemichloride.

Two analyses were made, one of material obtained by acting on the brown salt with dilute hydrochloric acid; this contained 81.79 per cent. of the silver. One by decomposing it with sodium chloride; this gives 81.93 per cent. A substance having the formula already given should, by conversion into chloride, give a mixture in which two-thirds of the silver should exist as hemichloride, and one-third as normal chloride. We have then

	Found 1	Found 2	Mean.	Calculated.
Ag per cent. –	81.79	81.93	81.86	82.35

a result sufficiently close to afford a confirmation of the constitution assigned.

When the brown salt is decomposed with dilute hydrobromic acid or an alkaline bromide, a corresponding result is obtained. By treatment with hydrobromic acid a mixed bromide resulted, which proved to contain 66.06 per cent. of silver.

A general consideration of all the reactions which I have obtained seems to indicate that the action of sulphuric acid and sodium hypophosphite on silver carbonate does not lead directly to the production of the double salt which I have described, but that the hemisalt is produced in excess, often in large excess; that the nitric acid oxidizes this excess, being able to attack the *free* hemisalt, but not that portion which is combined with protosalt and so rendered stable. It follows that, whatever has been the original relative proportion between the two salts, the nitric treatment leaves always one molecule of each. If it were possible to control the formation, it is not improbable that a pure hemisulphate might be obtained. But the action of the hypophosphite tends so strongly to carry the reaction still further, that reduced silver appears, and in removing this with nitric acid the double salt results. A confirmation of this is found in the fact that the treatment with nitric acid much reduces the deep terra-cotta color of the original product. If this difficulty can be overcome, we may yet obtain hemisalt isolated.

There is reason to suppose that numerous other compounds of silver hemioxide with oxyacids may exist. These compounds cannot be obtained by acting on the normal salts with sodium hypophosphite or with hypophosphorous acid, but it appears probable that they may be produced when the normal salts are formed in the presence of sodium hypophosphite. If to the last-named salt we add a solution of a salt capable of precipitating silver nitrate, and then further add silver nitrate, we obtain precipitates which, after standing some hours with frequent stirring, appear to contain compounds of silver hemioxide. But these products do not resist the action of nitric acid; consequently there appears to be no means of purifying them and of deciding with certainty as to their nature.

When sodium citrate and hypophosphite are dissolved together, and a little silver nitrate added to get rid of chlorides, then after standing and filtering more silver nitrate is added, a precipitate is obtained which, after a time, appears to contain silver hemicitrate in an impure form. When a little of this precipitate is put into much water containing a trace of ammonia (five or six drops to 100 c.c.) a fine rose-red solution results.

Most oxysalts of silver are darkened by light. In a paper published in this *Journal* for July, 1887, I mentioned that films of these salts exposed to light and then treated with dilute hydrochloric or hydrobromic acid appeared to be converted into hemichloride or hemibromide, and argued therefrom oxyacid hemisalts of silver must exist, and be formed by action of light on normal salts. I believe that I have been able to prove the existence of a hemisulphate with a strong probability that many other hemisalts may be formed both by the action of light and also by purely chemical means. It is possible that at some future time we may succeed in obtaining some of these compounds in a state of purity.

M. Carey Lea.

THE PECULIARITIES OF LANGUAGE.

"Takem sells a dozen imperials for four dollars.

"Does he? I've been trying to raise one these many years, but my face won't grow any hair somehow. Think I'll go and buy one, since the price is so reasonable!"

Correspondence.

PATENTED.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: In your last issue we find the following question and reply:

"How can old, worthless celluloid films (Carbutt's flexible) be made useful?

"*Answer.*—Soak the old negatives or failure films, fixed or unfixed, in a very hot soda solution, and wash off all the gelatine adhering. When dry cut up the films into small shreds and dissolve them to a convenient consistency in amyl acetate. The solution is an excellent varnish for negatives or lantern-slides, and can be applied without heating the plate. It is, in fact, the so-much praised Zapon varnish."

Concerning this we beg to say that the use of amyl acetate as a solvent for pyroxyline is patented, and that we are the only persons having the right to use it as a varnish or collodion. We would suggest that you refer to this fact in any future reference to such matters as that contained in the above. Yours truly,

Celluloid Zapon Co.,
C L. CONOVER,
Secretary.

NEW YORK, Jan. 12, 1893.

THE SCOVILL & ADAMS CO.

Gentlemen: Once more are photographers under obligations to you for a most valuable publication, "The Chemistry of Photography," by W. Jerome Harrison. Its object as stated in the preface is "to assist in the abolition of 'Photography by the rule of Thumb.'" If the craft will study this most excellent work of Harrison's less failures and better work will follow.

Yours very truly,
Chas. Wager Hull.

NEW YORK CITY, Jan. 20, 1893.

Photographic Societies.

THE WINNIPEG CAMERA CLUB.

THE above club has been promoted and organized for the benefit of the many amateur photographers in the city.

A large room has been rented in the London and Canadian Chambers, corner of Main and Lombard Streets, which is being suitably furnished and will be fitted with a dark-room and all the appliances necessary for the development of negatives.

It is the intention of the club to have an interesting course of lectures, by the leading photographers, during the winter months, which it is hoped will form a great attraction of the club and be of great assistance to the members. An exhibition of work done by the club will also be held during the season.

The leading photographic journals will be kept on file.

The subscription has been made very moderate ($3) and places the usefulness of the club within the reach of all interested in photography.

THE PHOTOGRAPHIC SOCIETY OF JAPAN.

A REGULAR monthly meeting of the above mentioned society was held on Friday, December 2d, at the rooms of the Geographical Society (Chigaku-Kiokai) Nishi-konyacho, Kiobashi, Tokyo, beginning at 5 P.M., Dr. E. Divers, F.R.S. etc., in the chair.

Viscount C. Hori, G. Bigot, and K. T. Takahashi were unanimously elected members of the society.

Mr. T. Tanaka was called on to report on the "Retouching Solution," that was mentioned in the report of the last meeting. He reported very favorably, stating that he found it the best medium that he had, so far, used.

Mr. Kajima Sebi showed some very effective prints of sunset views, and an enormous camera for taking direct negatives on plates measuring 42 x 36 inches.

Pin-hole photographs were shown by Mr. Favre-Brandt, Mr. Tanaka, and Messrs. W. K. Burton and K. Arito. These were of various sizes, varying from about 8 x 6 inches to 18 x 12. Some were remarkably good, showing, in the general opinion of those present, all the definition that was necessary for pictorial effect. Some members considered the effects better than those of photographs taken with lenses.

Mr. K. Arito showed a set of prints of Konodai on plain paper toned with platinum. The prints were made by the process described in the report of the annual meeting for 1891.

Mr. K. Ogura showed a set of excellent and most interesting photographs of the recent military manœuvres.

Messrs. W. K. Burton and K. Arito showed the results of a set of experiments with plates stained with picric acid neutralized with ammonia (presumably really picrate of ammonium) to prevent halation. Mr. Burton had, some years ago, tried the effect of staining films with various dies to prevent halation, but had not been very successful. As a rule, if halation were prevented the plate was very much slowed, or there was great difficulty in getting density. With picric acid this was not so. The sensitiveness was somewhat reduced, but not much, whilst, so far as density was concerned, the difficulty had, up to the present, been that too great density had to be got in every case. The picrate did not seem so much actually to slow the plate as to act as a retarder in development. This necesitated a developer strong in alkali, and, even with very small proportions of pyro, or of eikonogen, the density came up too great. Doubtless farther experiments would lead to the discovery of a remedy. The next were to be made with plates coated with emulsion with which picric acid (or picrate of ammonium) had been mixed. Both halation and solarization were completely prevented.

Several hundred lantern slides were shown on the screen, and it was decided to hold a lantern evening in Yokohama at a early date.

The proceedings terminated with a vote of thanks to the Chairman.

SHE DID'T FEEL COLD.

"It's such a cold day and you're so thinly clad, Miss Beauty."

"Pshaw, I've got photographs of my admirers' love-letters in my pocket and I feel so warm I can hardly stand it?"

Notes and News.

A Business and Social Reunion of dealers in photographic materials was held Wednesday, January 25th, at the Grand Hotel, Indianapolis, Ind.

Wedded.—Herman W. Kixmoeller, with O. H. Peck, of Minneapolis, and Huldar Rutzatz were married, Wednesday evening, January 4, 1893.

The Woodstock Camera Club was formed at the residence of W. L. Mott, 899 Cauldwell Avenue, on Thursday evening last, with a membership of twenty, when the following officers were elected: Dr. E. J. Tucker, President; W. L. Fagan, Vice-President; W. L. Mott, Secretary; R. T. Curtis, Treasurer.

The Photographic Times again treats its subscribers to a magnificently illustrated Christmas number. It does great honor to its publishers, and we congratulate them on their enterprise, which undoubtedly will be properly rewarded. They can be justly proud of their Christmas number.—*The Eye.*

Poor Man.—"I was in a terrible position this morning."

"What was the matter?"

"A crank came in and wanted his bald head photographed, and, I tell you, for the nonce life appeared to me to be a regular blank!"

Potassium Chloride in the Oxalate Developer.—*By M. Hector Colard.* (*B. J.*)—The following is recommended as a means of imparting sepia tones to bromide prints:

A.

Water	1000 c.c.
Oxalate of potash	330 grammes

B.

Water	1000 c.c.
Chloride of potassium	130 grammes

C.

Water	500 c.c.
Ferrous sulphate	24 grammes
Citric acid	2 grammes
Potassium bromide	2 grammes

For use twenty parts of A, five of B, and five of C. The more of B that is used the more decided will be the brown tones obtained.

Colored Photographs of the Spectrum.—*By M. G. Lippmann.* (*Bull. Soc. France de Phot.*)—A film of bichromated albumen dried in contact with glass is backed up with a mirror of mercury and exposed; it is then only necessary to dip it into water to make the colors appear, the water developing and fixing the picture at the same time by the removal of the bichromate. The image vanishes on drying the plate, to reappear each time it is wetted. The colors are said to be very brilliant, and to be visible when the plate is held at an angle; in examining it by transmitted light, colors complementary to those seen by reflection are faintly visible. In the case of gelatine the behavior of the plate is similar, except that it is not necessary to thoroughly wet the plate to render the colors visible; it is quite sufficient to moisten the surface slightly by breathing upon it. The theory is simple, Mr. Lippmann remarks. As in the case of sensitive films containing a silver salt, the mercury mirror gives place, upon exposure, to a series of maxima and minima of interference. The maxima alone affect the film, which in consequence assumes a laminated structure, and is divided into films alternately capable and incapable of absorbing water. When the plate is dry the image is invisible; but as soon as it is wetted, the parts of the film unaffected imbibe it, the index of refraction and the reflecting properties vary periodically in the thickness of the film, and a colored image becomes visible.

The Photographed Meteor.—At the meeting of the Connecticut Academy of Arts and Sciences in New Haven, January 18th, the photographic plate obtained the previous Friday night of a meteor was exhibited by Mr. John E. Lewis, of Ansonia, who secured the photograph. Mr. Lewis, who is a bookkeeper living at Ansonia, but who works at Shelton, is a skilful amateur photographer, who has of late been photographing the stars, and on Friday night was trying unsuccessfully to get a representation of Holmes' comet, when he obtained the prize.

In the photograph the path of the meteor shows as what seems a bright, clear-cut, almost straight diagonal line running across the plate. The line on the plate reaches across about eighteen degrees of the heavens. Where it enters the field, however, the line shows minute variations, indicating irregularities in the amount of the meteor's light. The rest of the line is sharp and regular, and throughout its whole distance is about the breadth of the mark of an ordinary lead pencil.

Professor Newton, of Yale, discussing the meteoric photograph, spoke of its extreme scientific value, saying that while astronomical photography has shown a few light lines which may or may not have been meteoric, nothing to compare in value with Mr. Lewis' plate has yet been made. The meteor, he said, had been seen from New York to Boston. It was very brilliant and reached over some ninety degrees of the heavens, breaking into half a dozen pieces which probably fell not far from Newburgh, N. Y. But as snow has fallen since, it had seemed useless to hunt for them.

The meteor's path in the plate is clearly marked out across the stars in Andromeda, and its intensity is indicated by the fact that at every point it appears brighter than any of the stars, which were subjected to an exposure of thirty-three minutes. Mr. Lewis himself did not see the meteor, and at first thought the line was a defect in the plate and was about to destroy it, when further investigation showed its true character and value.

WEIGHTS AND MEASURES IN ENGLAND VERSUS THE DECIMAL AND METRIC SYSTEMS.

It is impossible for a comparatively new country like America to conceive the mode by which the English conduct their internal commerce, and the difficulties which exist in trading not only with foreigners but between the different portions of the United Kingdom, owing to the versatility of the weights and measures used in conducting her business, the different values of the varied denominations within the United Kingdom, and the many quantities represented by the same denominations when applied to articles of daily commerce.

If the ingenuity of man had been strained to the utmost to introduce a system of weights and measures calculated to throw difficulties in the way of commercial progress, to perfect a system that no one man has thoroughly mastered, and to place irritating obstacles in the path of education of both pupil and teacher, that end has been thoroughly attained, and, strange to say, it is the system pursued in the educational establishments throughout the kingdom at the close of this nineteenth century, although most of the colonies have set the mother country a better example.

Can anything be more absurd than the following? We sell "pickled cod" by "the barrel," "trawled cod" so much "each," whilst "large hooked cod" are sold by "the score," and "crimped cod" "per pound," shrimps by "the stone," soles by "the pair," Dutch smelts by "the basket," and English smelts by "the hundred."

This is the Billingsgate system, but at Grimsby (another important fish market) quite a different style of weights and measures is made use of, and the sale of fish is very much by "the box" and "the last."

A customer once asked a Grimsby fish salesman to let him have a stone of oysters, the reply was "We don't sell oysters by weight, we sell them by measure." "Then let me have a yard," said the buyer. Butter in Ireland is sold by "the cask" and "the firkin"; in England by "the pound" of 16 ounces, by "the roll" of 24 ounces, "the stone," and the "hundred-weight," which is not 100 pounds but 112 pounds,

Analyzing the quantities of the various denominations only makes confusion doubly confounded.

What is a "load?" A load of straw is 1296 pounds, a load of *old* hay is 2016 pounds, and a load of *new* hay 2160 pounds; but my tables do not tell me at what age hay becomes old.

"What is a 'firkin?" A firkin of butter is 56 pounds, a firkin of soap 64 pounds, and a firkin of raisins 112 pounds. A "hogshead" of beer is 54 gallons, but a "hogshead" of wine is 63 gallons, a pipe of Marsala wine is 93 gallons, of Madeira 92 gallons, of Bucellas 117 gallons, a pipe of port 103 gallons, and a pipe of Teneriffe 100 gallons. Again, what is a stone? A "stone" weight of a living man is 14 pounds, but a "stone" weight of a dead ox is 8 pounds, a stone of cheese is 16 pounds, of glass 5 pounds, of hemp 32 pounds, a stone of flax at Belfast is 16¾ pounds, but at Downpatrick 24 pounds, while a hundred-weight of pork is 8 pounds heavier at Belfast than it is at Cork—another injustice to Ireland.

England is slow to adopt new principles, but as more than 400 millions of people are using the metric system, surely it is time she took a step in that direction, a hint that probably may not be thrown away upon the grand American Republic.

In cataloguing the above absurdities of English measurement, I must not omit to inform you what quantities a barrel represents. A "barrel" of beef is 200 pounds; butter, 224 pounds; flour, 196 pounds; gunpowder, 100 pounds; soft soap, 256 pounds; beer, 36 gallons; tar, 26¼ gallons; whilst a barrel of herrings is 500 herrings.

One example of the comparative merits of the existing system with the decimal system will suffice.

Reduce 987,654,321 inches into leagues. To arrive at this we must divide these figures by 12 to get them into feet, then divide the product by three to make yards of them, next by 5½ to find the number of poles, another division of the product by 40 exhibits the furlongs, then if the brain will stand it, for we have decimals in the quotient, we must divide by 8, which gives us the miles, and lastly by 3 to furnish the leagues, *quid erat demonstrandum;* and, if we have made no mistake, we have arrived at a satisfactory result.

To attain the same end by the decimal system, allowing the same number of denominations but each a decimal, no calculation is necessary, no sums to work out, but as there are six denominations, place the pointer on the left-hand side of the 6, the figures on the left of the pointer, viz., 987, show the number of leagues, whilst the figures on the right of the pointer furnish the fractions of a league, viz., 6 miles, 5 furlongs, 4 poles, 3 yards, 2 feet, and 1 inch.

Yet, can it be believed? the old system is taught in every school in England, and the cruelty inflicted upon the brains and the temper of the young, to say nothing of the loss of time and the cost, cannot fail to lodge a grave responsibility upon the Legislature which permits such a condition of things to exist.—J. James Cousins, *in Science.*

The Editorial Table.

We have received from Wilson-Hood-Cheney Co., a neat card on which we recognize the familiar features of our good friend, Mr. John G. Hood, Chairman of the Company. The picture is an excellent silver print mounted on one side of the card.

The Photographic Times Dining Club has received yet another contribution from its friends. This time it is the beautiful Tree Cake, which is sent yearly across the Atlantic from the Dresdener Albuminpapierfabrik Actiengesellschaft with their best wishes for the New Year.

The cake this year is as beautiful as ever, and as much appreciated.

The Christmas Number of The Photographic Times is among the interesting numbers of the season. The illustrations are better than the regular numbers, if that be possible, and the matter is of interest to any one, and of great interest to camarasts and camaratics. A copy should be in the hands of every professional or amateur photographer,—*The Journalist.*

Messrs. George J. Wolf & Co. have, we hear, purchased the business of the Philadelphia branch of the Blair Camera Co. Mr. Wolf was brought up with Wilson, Hood Co., started the firm of Wolf & Cheyney, and has

been for some time manager of the Blair Camera Co. at Philadelphia. The new company has our sincere wishes for its future success.

Enamelled Bromide Paper.—We have received from the Eastman Kodak Co., a magnificent enlargement of their new Enamelled Bromide Paper, and of the beauty of finish we can only say that no other paper we have seen gives such perfect results with so little retouching.

No. 1 of Vol. I. of "Notes from the Secretary's Desk" is issued by the Society of Amateur Photographers of New York, and is dated Jan. 1, 1893. It consists of interesting notes and bits of news printed on the back of a postal card.

Volume XVII., new series volume x. of the *St. Louis and Canadian Photographer*, makes its annual appearance as usual filled with valuable matter for the professional photographer. It will be added to its predecessors in our reference library, where it may conveniently be referred to.

The bound volume of *Anthony's Photographic Bulletin* for 1892, makes a handsome appearance in its neat red cloth with gilt lettering. And inside it is made still handsomer by the silver print frontispieces which it contains, with an occasional photogravure. We add it to the other volumes of our esteemed contemporary with pleasure.

Our good friend, Mr. Geo. Fiske, of Yosemite, Cal., has sent us a collection of eight 11 x 14 photographs, views in the Yosemite valley. He desires our opinion of them. This affords us much pleasure to do for artistically and from the technical point of view, these pictures are highly satisfactory. The subjects are "The Downs of Yosemite," four different views of El Capitan, "Wawona," one of the big trees of the Mariposa Grove, "Sentinel Rock," and a general view of the valley.

Three of a Kind.—We have received from the Messrs. Gunzendorfer, of Monterey, Cal., two most interesting photographs, entitled "Three of a Kind." The pictures complement each other, and fully justify their titles.

They are both figure pictures, and exceedingly difficult ones at that, but they are remarkably well photographed, and reflect great credit on the operator, Mr. A. B. Gunzendorfer.

"They were taken in the latter part of December," writes Mr. Gunzendorfer, "and although I formed part of the group, I performed the entire work, exposing, etc. This I accomplished by attaching a long tube with bulb to the shutter of my lens and operated the same by pressing down with the ball of my right foot."

We congratulate Mr. Gunzendorfer on his success.

Record of Photographic Patents.

490,031. Camera Shutter. Eusebius J. Molera, San Francisco, Cal.

490,059. Photograph Holder. George M. Bainbridge, Toronto, Canada.

490,117. Camera. William S. Laighton and A. P. Hitchcock, Norwich, Conn.

490,180. Coin-Operated Photograph Machine. Pierre V. W. Welsh, New York, N. Y.

DAILY EVIDENCE.

HAYSEED.—Do you photograph any figures?

PHOTOGRAPHER.—Certainly.

HAYSEED.—Well, just make a nice picture of 150 dollars on a card. I want it handy so I can look at it every day and remember what a big fool I was to let a city chap sell me a brass watch for that amount!

Queries and Answers.

13 MRS. C. L. P.—1. Of whose make is the lens on a Triad camera?
2. What is the focal length?
3. What are the sizes of the diaphragms?
4. Is it a rectilinear lens?

13 *Answer.*—1. The American Optical Co.
2. Five inches.
3. No. 1. $\frac{1}{16}$ of an inch = *f*/8.
No. 2. $\frac{5}{16}$ of an inch = *f*/16.
4. It is a wide-angle, and embraces a view of 90 degrees and more.

14 A. DE LA T.—In the "Annual for 1893" I see an article by John R. Clemons (p. 84), entitled "Toning with Aluminium Chloride," I would like to know if the same formula would apply equally well in case American aristo paper or Ilford printing-out paper were used?

14 *Answer.*—There is no reason why the aluminium bath should not work equally well with other chloride of silver paper than Mr. Clemons' own. We have not made any experiments in that direction.

15 MEMPHIS, TENN.—1. Can shellac be dissolved in water? 2. Please give formula for ground glass varnish.

15 *Answer.*—1. Crushed shellac 4 ounces, water 16 ounces. Heat to boiling point and by constant stirring add hot concentrated borax solution till all is dissolved. Cool, decant and strain through flannel.

2.
Sandarac	90 gr.
Mastic	20 gr.
Ether	2 fluid ounces
Benzol	½ to 1½ fluid ounces

The proportion of the benzole added determines the nature of the mat obtained.

16 MICHAEL, S. T.—Is it absolutely necessary to iodize the silver bath of the wet-collodion process, and what would be the result if the bath is not iodized?

16 *Answer.*—Nitrate of silver solution as concentrated as when used for the sensitizing of collodion plates dissolves iodide of silver readily. If a silver bath was not iodized, the iodide of silver formed in the film would be immediately dissolved, causing innumerable pinholes all over the plate. Similar holes are produced when the bath is over-charged with iodide. It was one of the secrets and mysteries of the wet process to keep the bath properly balanced.

17 DORNBACH.—Why are the backgrounds of my groups taken by magnesium flash-light so very dark, when the figures are perfectly well illuminated.

17 *Answer.*—As the distance of the object from the light source increases so decreases the force of light.

CHAUTAUQUA SUPPLEMENT

TO THE

Photographic Times.

CONDUCTED BY PROFESSOR CHARLES EHRMANN.

JANUARY, 1893.

NOTICE TO STUDENTS.

The many students interested in photogrametry are advised to read an article on the subject, which has been written for THE PHOTOGRAPHIC TIMES, by Lieut. H. A. Reed, U.S.A., before going to study the author's book, "Photography Applied to Surveying." Lieut. Reed has instructed in the art of surveying by photographic aid in the colleges of West Point and Annapolis, and his works have been indorsed by the highest authority.

"Chemistry of Photography," by W. Jerome Harrison, is now a text-book in the advanced class. Students of other classes may read the book with much profit to themselves and lay the foundation to higher studies in chemistry, photographic or otherwise.

Pages 310, 327, 328, 329, 331 of "American Annual of Photography" for 1893 will convey information that is almost daily asked for. Do not neglect to read the "Annual." It is the best of its kind.

QUERIES ANSWERED.

No. 117.—1. Tell me, if you please, about the new developer amidol? Is it really as good as it has been pronounced to be? I have tried all the newer developers, but, in a great measure, have been dissappointed with the majority of them. I must say, for my own part I prefer the old orthodox pyrogallol.

2. Absolutely neutral sulphite of sodium I cannot get in any of our stores. Can you send me any from New York or could I make the article myself?

3. Perchloride of gold, when dissolved in water will within a few days deposit a brownish precipitate. What is it? Is it the result of adulteration intentional, or of impurity accidental?

Answer.—1. You may rely upon everything that has been said of amidol in THE PHOTOGRAPHIC TIMES. The advantages of amidol over other developing agents are its enormous energy, its power to produce any desirable, even absolute intensity, and owing to the absence of any alkali in the solution, the impossibility almost, to fog plates with it. The beautiful color of the deposit recommends amidol much as a lantern-slide developer.

2. Scovill & Adams Co. will soon have in stock a chemically pure and neutral sodium sulphite, especially imported for use with amidol. Before this very much desired chemical is at hand, we recommend to neutralize the alkalinity of the commercial article with sulphurous acid water.

3. Your chloride of gold may have been perfectly pure, but remember when its solution is exposed to light, the salt will be dissociated, chlorine will escape and the metallic gold be thrown down in the form of a light brown powder. The sediment at the bottom of your bottle is nothing but pure gold.

Moral! Keep your gold solution in the dark-room.

No. 557.—1. I would like to ask you for some information about pyro developer. By making up the pyro solution according to Carbutt's formula, how long could you expect it to remain good, and how would you know when it is not good and sure? Do such solutions deteriorate very fast?

2. I notice that some use pyro in alcohol. Is this better, provided you use a sulphite solution, made separate, and in proper proportion?

3. Dipping dry pyro with a spoon always appears to me to be liable to too much variance in quantity, when one would expect to get uneven results?

4. How long would para-amidophenol developer remain good made up by formula?

Answer.—1. Pyro developer made after any of the standard formulas of "American Annual of Photography" will keep indefinitely if excluded from the action of air. Open the bottle containing it, and the solution will speedily oxidize, turn yellow, and finally brown, when it is not fit for use.

2. Before sulphites were used to preserve pyro in solution, concentrated alcoholic solutions of it were made and so much of them dispensed as exigencies required. The alcoholic solution does

not deteriorate. The addition of sulphite to pyro solution is to preserve, it has no other functions, and therefore is not at all needed in alcoholic solutions.

3. The dry pyro method is probably the safest of all, but as you think it unreliable to measure out the substance with a spoon, why not take pelletone, which is pyro compressed into pellets of 2 grains in weight each?

4. Till it turns brown. Para-amidophenol resists oxidation very much, and is therefore one of the most desirable developers.

No. 582.—1. Is solio paper a kind of aristotype?

2. In regard to pictures for the World's Fair, I am at a *loss* to know what kind would be best. I have about 200 negatives that are all good and include a great variety of subjects, if you could suggest what you think would be best, whether groups, animals, houses, or landscapes. I have a number of churches and some old buildings, but nothing of much interest outside of this locality.

3. THE TIMES, of December 2d, offers a prize for pictures of *bad roads*, that I think I will try for, as we have some of the worst roads in this country there is anywhere.

4. Would lantern slides have to be sent by express in order to *reach you safely*, or could they be packed so as to go safe by mail?

Answer.—Solio paper is a chloride of silver gelatine emulsion paper. You may treat it exactly like Bradfisch aristo.

2. Landscapes, views of your mountainous and picturesque country, interiors of churches, historical landmarks, etc., would do well. We do not want groups. Send six or eight of the $6\frac{1}{2} \times 8\frac{1}{2}$ size, or four or six of the 8 x 10.

3. We know nothing about it. Apply to the advertiser.

4. Securely packed in an open box and marked "merchandise." Slides can be sent by mail as third-class matter.

No. 553.—1. Some time ago I bought a bottle of toning and fixing solution. When I received it I noticed at its bottom a black precipitate, and after a few days standing in light the precipitate had materially increased. When going to work I found the solution did not tone at all. I think the black precipitate is gold, and explain the want of activity of the bath by that reason. Am I correct, and what has caused the gold to precipitate?

2. How can the precipitation of gold be prevented?

3. Is there a way to recover this gold and make it useful?

4. How much water is wanted to make a concentrated solution of silver nitrate, and how strong should the solution be for sensitizing albumen paper?

5. I understand it to be immaterial how strong the solution is.

6. What is the office of magnesium nitrate and of potassium nitrate in the silver solution? and

7. Why not use pure silver solution?

8. Is the bath sunned merely for the purpose of separating from it any organic matter it may contain, or for any other?

9. Some use kaoline for clearing the bath. Will that not be sufficient without sunning?

10. Does the silver bath spoil in time, and is it best to prepare of it just as much as wanted for the occasion?

11. I have been anxiously looking for Robinson's "Photographic Chemistry." When will it be out?

12. Are the commercial combined fixing and toning baths productive of the same results than those by toning and fixing in separate solutions?

13. Can these baths be also used for freshly silvered and ready sensitized albumen papers?

Answer.—1. The commercial fixing and toning baths should be used with great caution. If ever anything has brought the chloride of silver emulsion papers into discredit, it has been it, or rather that of some manufacturers, whose compounds may be very profitable to themselves, but not at all so to the consumer. They frequently contain no gold at all, and the tone obtained is due to sulphurized silver. Lead is said to be the toning agent, but it merely induces a decomposition, resulting in the formation of silver sulphide, which gives color to the deposit Large amounts of chloride of silver in the solution will do the same. The black precipitate in your solution is probably nothing but silver chloride separated by the action of light. For a reliable combined toning bath see pages 446 and 447, Vol XXII., PHOTOGRAPHIC TIMES.

2. By keeping the solution in the dark if gold is present.

3. If gold really has precipitated, it may be reasonably supposed there is some more of it in the solution. Add hydrochloric acid when all sulphur of the hyposulphite will be thrown down, filter and add to the clear a strong solution of ferrous sulphate, which will throw down the gold in shape of a brown powder, which after washing may be redissolved in aqua regia, evaporated and be used again.

4. To make a concentrated or rather saturated solution of silver nitrate, an amount of water about

its own weight is wanted; but you mean a solution strong enough for silvering albumen paper, which is for mostly all paper like 1 in 10. Such a solution should register about 45 degrees on the hydrometre.

5. You are at fault. The strength should be so that all the silver is converted into chloride of silver by the alkaline chloride in the film and that the albumen is thoroughly coagulated. A bath too strong or not strong enough will cause many other serious difficulties.

6. You can do very well without them. By adding these salts to the solution, the color of the deposit is changed somewhat, but it has no influence upon the tone.

7. It is certainly the best way to do so.

8. To separate organic matter, but the solution should first be made alkaline.

9. Kaoline and also animal charcoal discolor the matter, but do not destroy it. Permanganate of potassium destroys, but the bath must also be sunned.

10. It does not, provided the silver nitrate is pure, and the solvent, distilled water, is free from organic substances.

11. Harrison is the author, not Robinson.

Harrison's "Photographic Chemistry" has been published recently. We have made it a text-book in the advanced class, and advise also the students of other classes to read it. It is evidently the best book for our purposes.

12. You may get the same tone. The permanency of the print is doubtful unless the solution is compounded on reasonable principles.

13. They can. Your instructor has albumen prints, toned some forty years ago in a combined bath, and, as to brilliancy and depth of color, they can vie very well with many made nowadays, if they do not surpass them.

No. 701.—I surmise that with the quick plates I have at present a shutter will be almost a necessity after the days grow longer, and if there is any certain kind you would advise and it lies within your domain as instructor to say, I should be pleased to hear from you.

Answer.—You will want a new Prosch or a Kazoo shutter. Let us know the diameter of the hood of your lens and we will procure one, as you may direct.

No. 463. Do Scovills furnish kits of various sizes with any plate-holder sold?

Answer.—No! Only when specially ordered.

Pictures Received.

No. 461.—"A Sensitive Plate," and "Lady on Horseback," both printed on cyanotype paper in the student's usual excellent manner. We are sorry to learn our fair friend has withdrawn from the Exchange Club, but hope she will return in good season.

No. 696.—Three 5 x 8 inches, No. 1. Group of two ladies and child with an enormous flare spot in the centre. Shade your lens when working against the sun. No. 2. Picture of woman in grape-vine arbor. Very nice composition. Over-exposed. Bromide of potassium in the developer might have made a good picture of it. No. 3. Portrait of child. Very nice. But printing of all of them is very much below mediocrity. If you will print on aristo paper the toning bath described in Photographic Times, of September 2d, will give much better results.

No. 557.—A flash light. Group of gentlemen, presumably the student himself and three children. Lighting very good, excellently developed and a good print. The same must be said of a picture of bull instantaneously taken.

No. 605, who has joined the Corresponding Class but a few months ago, has sent some very fine work. No. 1. Picture of lime-kiln in the forest. Fairly good, somewhat over-exposed, badly over-toned print. No. 2. Cabinet portrait of old lady. Vignetted print. Very good. No. 3. Cottage in garden. Beautiful blue print from fine negative. No. 4. Another view of the same subject, and No. 5, view of the factory buildings are as fine photographs as we expect to see from any of our scholars of the subordinate class. These pictures were all made with the Waterbury B outfit upon Carbutt orthochromatic plates.

No. 586.—Unretouched proofs of five cabinet portraits. Highly satisfactory. We are much pleased with the enormous progress this diligent and energetic young lady is making. Her work deserves much praise.

No. 699 has sent a large number of 4 x 5's instantaneously taken with a hand camera upon Harvard plates and developed with the Harvard solution. These pictures represent scenes in Scotland, and with the exception of one present all a dull, monotonous, and hazy appearance. The student has developed and handled these plates in an improvised dark-room and by yellow light, and, as he suggests himself, they are light-struck. Such very sensitive plates as the Harvard No. 2 demand a perfectly safe dark-room.

No. 752.—Nos. 1A and 1B 5 x 8 views of the great Arizona desert. Much over-exposed. For such open and unobstructed views, and at Arizona

altitude, fifteen seconds, a Harvard plate and a rectilinear lens, stop *f*/22 is entirely too long. Stop *f*/32 and one second exposure would have been correct probably. The reason that B is better than A is probably owing to having been developed with partly oxidized solution. Nos. 2A and 2B, child on horseback, also over-exposed, but these plates might be intensified and give much better prints. No. 3, portrait of child and cat, is the best exposed of all, but the student is surprised the face of the child and the cat is so much blurred, when they looked so well on the ground-glass. Child and cat both have moved very much while exposure was made. The printing on blue paper is good.

No. 535.—"Portrait of Gentleman," reclining position; a photograph of high order and can well rival with the average of professional work. It is a picture to be proud of. There is also a reproduction of the Chautauqua diploma the student received last summer.

Mr. O. ought to join the Exchange Club. We want a few more members of his abilities.

No. 57.—Christmas offering in the shape of a neat little album, containing a variety of well-made and interesting pictures. The title-page, student's own work, is tasty and artistic.

No 495.—"Portrait of Child," on matt-surface paper; fine negative, well retouched, printed and neatly mounted; excellent work. There are several prints on the same paper; landscapes, *genre*, and still life; among which "On the Roadside" stands highest. On albumen paper there are several good interiors, a very fine group of fowls, and a splendid 6½ x 8½ of a Newfoundland dog; the best of them is, however, "Little Girl Gathering Golden Rod." Several cloud pictures, not quite as striking as the one contributed to "The American Annual of Photography," are finely printed in blue. The young lady seems to be equally successful with almost any subject she undertakes to photograph. She is certainly a rising star, if not among the great host of amateurs, most certainly so in the Chautauqua School.

No. 635.—Large collection of landscapes and views in the primæval forest of Washington. Excellent photographs, and highly interesting. They describe vividly American pioneer life in the backwoods.

No. 578 —Another large and equally fine collection of cabinet size; a few portraits, but mostly Views in Prospect Park. Scarcely a year ago, armed with a B. B. B. outfit, he joined C. S. P. We admire his fine work with much pride.

No. 753. Two 4 x 5s from excellent negatives instantaneously taken.

One of them is on bromide paper and the other on gelatine aristo, but remarkable to say both are of nearly equal tone, black with a greenish cast.

The aristo is evidently overtoned in an old combined bath, and the bromide, on paper of doubtful quality has been developed with hydrochinon probably. We advise to discard this developer and use in place of it eikonogen or amidol. They are the cleanest developers, produce best halftones, intense bluish-blacks and brilliant whites. Dispense with the intermediate acid clearing bath, but fix in acid hypo.

For toning aristo paper we refer you to the respective article on pages 446 and 447 of THE PHOTOGRAPHIC TIMES Vol. XXII.

No. 475. Fragment of an aristo print that would not come off the ferro plate. The plate was not clean, and after squeegeeing the print upon it, the plate was put in a warm place, and the gelatine melted.

Another print of the same negative. It is the best toned print he ever made from that plate, and asks why he cannot get such good tones every time. We answer simply that he tones all his pictures too high. Judge not of the tone of an aristo by reflected, but by transmitted light. When by looking through it the picture assumes a purplish hue, arrest toning, wash copiously and rapidly, and your prints will be all right, you may be sure.

No. 525. Still life and group of 5 x 8 in size. Excellent photographs, though in the group are several persons, whose portraited faces are not as sharp as desired to be, they had moved during exposure.

No. 700. A very nice 5 x 8, a view in the most picturesque part of Sullivan county of this State. It is a snow scene, the plate a Carbutt orthochromatic, developed with our own eikoquinole. There are excellent details in the snow portions of the picture, but the darker ones are not in harmony owing to mismanagement in the development. Nevertheless is this first picture presented by the fair student very encouraging.

No. 753. This is another new acquisition to the Corresponding Class. He shows the first results of his labor, lantern-slide negatives, intended to be printed by contact. Considering the poor little apparatus our industrious student has at his command, we can but express entire satisfaction with his work.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

Harrison's Chemistry.—"It is an excellent work and should be in every photographic library."—J. R. SWAIN, Dana, Ind.

The Holiday Number of THE PHOTOGRAPHIC TIMES contained a number of excellent reproductions from photographs. The reading matter was good, as usual.—*N. Y. Recorder.*

THE AMERICAN ANNUAL.

"It is perfection for both old and young photographers."—B. W. KILBURN, Littleton, N. H.

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"It is a wonderful issue, just full of information, and beautiful illustrations."—OTTO VAN BARGEN, San Francisco, Cal.

"As a whole it is to me very entertaining, useful and attractive; one of the best yet, and I have them all from the first."—GEORGE W. KENNEDY, Beaver Falls, Pa.

"There is an abundance of useful articles on various departments of photography and art, and a special feature of the book is the illustrations."—*The British and Colonial Druggist.*

"There is plenty of readable matter, and the tables, formulas, etc., are carefully compiled. It is essentially a work that the English photographer may read and profit by."—*The Photographic News.*

This handsome volume is this year better than ever. It contains more illustrations and more practical articles. It is well worth perusal by everybody.—*The Amateur Photographer.*

"All our 'Annuals' are sold already (Jan. 6th, 1893). Your 'Annual' this year is certainly the most creditable one we have ever seen in the way of a photographic publication."—W. P. BUCHANAN.

"It is beautifully illustrated with full-page engravings, and as a record of photographic progress, stands high among photographers, both amateur and professional."—*The Valley Register*, Middletown, Md.

Got up in the style for which this "Annual" has acquired a high reputation, with its good paper and bold typography, it is further enriched by several nicely executed process-block illustrations.—*The British Journal of Photography.*

"It is the finest publication of the kind I have ever seen. "The Annual" improves with each issue and has now gotten to be indispensable. It is worth its weight in gold to the amateur."—GEO. C. RHODERICK, JR., Middletown, Md.

A BRIDGE OF HUMAN BODIES.

AN intensely thrilling and remarkably exciting exhibition of nerve and strength may be seen in the production of the new English melodrama, "The Span of Life," which received its first New York representation at the People's Theatre on Monday, January 16th. During a scene which is laid in a most rugged and mountainous region of Africa, it becomes necessary to cross a chasm with a roaring cataract beneath to escape being killed by a savage tribe of Arabs. Rather than be taken by these brutes, the male members of the pursued party, seeing all other means of escape cut off, in sheer desperation mount each other and when linked together execute a thrilling drop across the ghastly opening, thus, by almost superhuman power, forming a veritable bridge of bodies, which serves as a crossing for the others. This act, although successfully accomplished is an extremely hazardous undertaking, and has never been attempted by any other athletes excepting the famous Wilson Family, of London, who appear in this production. The play comes under the direction of Mr. H. S. Taylor, who also gave us the first glimpse of that vastly successful drama, "A Dark Secret," some years ago, with its never-to-be-forgotten tank of real water. Mr. Wm. Calder, the English manager, will personally superintend every production. Ten masterpieces of picturesque stage art are furnished by Mr. Rafter, to embellish the plot and add realism to the *ensemble*, the most striking of them are the cellars of the "Peter's Finger" Public House; the Lighthouse on "Coffin Rocks," Devonshire, England, and the "Jungles and Forests" of Africa, and the great "King's Chasm," with its roaring torrents of falling water, where the Span is made from which the play takes its name.

TRY DR. ANDRESEN'S AMIDOL DEVELOPER.

Business Notices.

FOR SALE.—6½ x 8½ Albion Camera and Tripod, with five extra mahogany holders and Eastman Roll-Holder, in best of order; cost $72; will sell for $50. Also Eastman Bromide Enlarging Outfit, consisting of Camera to take 8 x 10 negatives or smaller, easel for 25 x 30 with set of kits for smaller sizes, and roll-holder for paper; cost over $50, will sell for $25. Address
H. W. BELKNAP, 50 Beacon St., Boston, Mass.

PHOTOGRAPHERS, see advertisement of Woolford & Sinn, page viii., in regard to albumen enlargements, and double your business.

"THE DEVELOPER OF THE FUTURE."—S. P. C. Amido Developer in solution ready for use. 8-ounce bottle, with directions, 50 cents.
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WANTED.—Volume 13 of THE PHOTOGRAPHIC TIMES. Address, with price, OTTOMAR JARECKI,
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WANTED.—THE PHOTOGRAPHIC TIMES of September 4, 1891, (No. 520). HERBERT F. SMITH, Secretary Syracuse Camera Club. 322 South Salina Street, Syracuse, N. Y.

E. W. NEWCOMBE & CO. wants a May 30, 1890, copy of THE PHOTOGRAPHIC TIMES.

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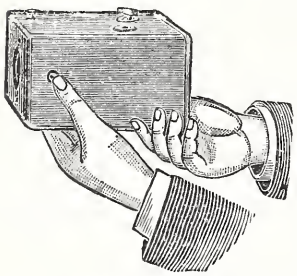
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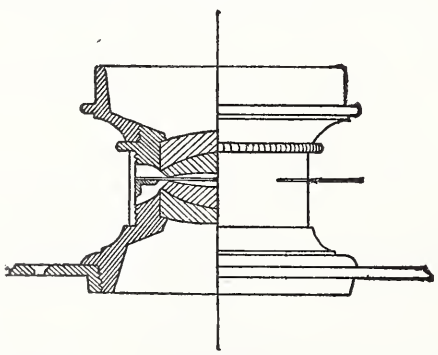
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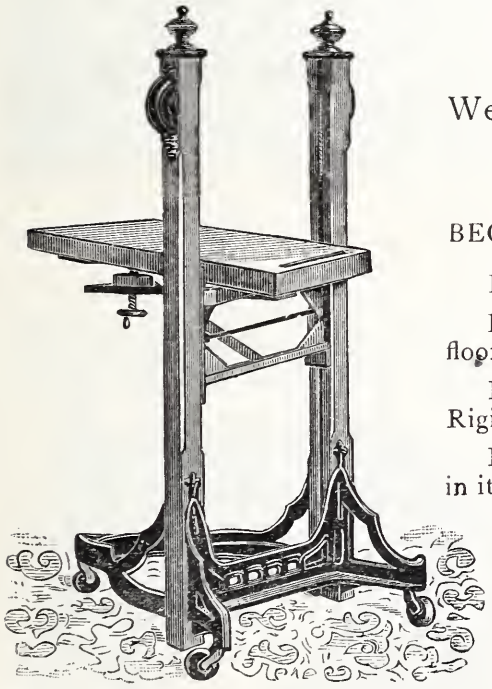
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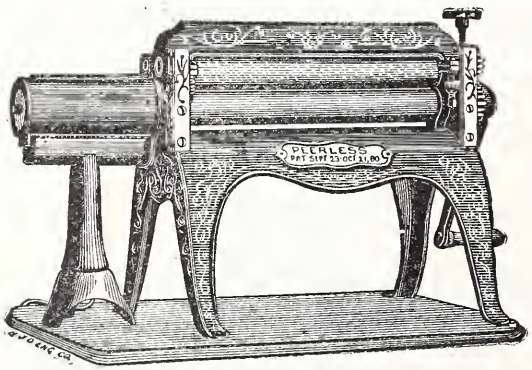
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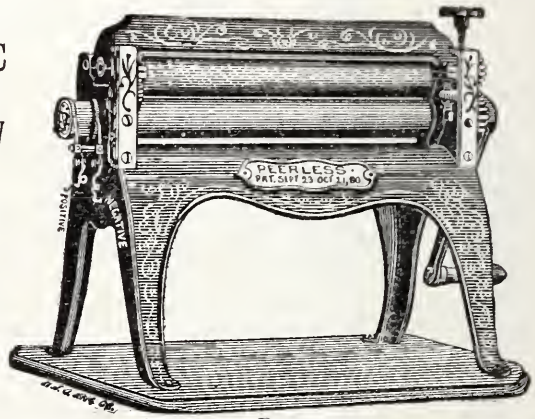
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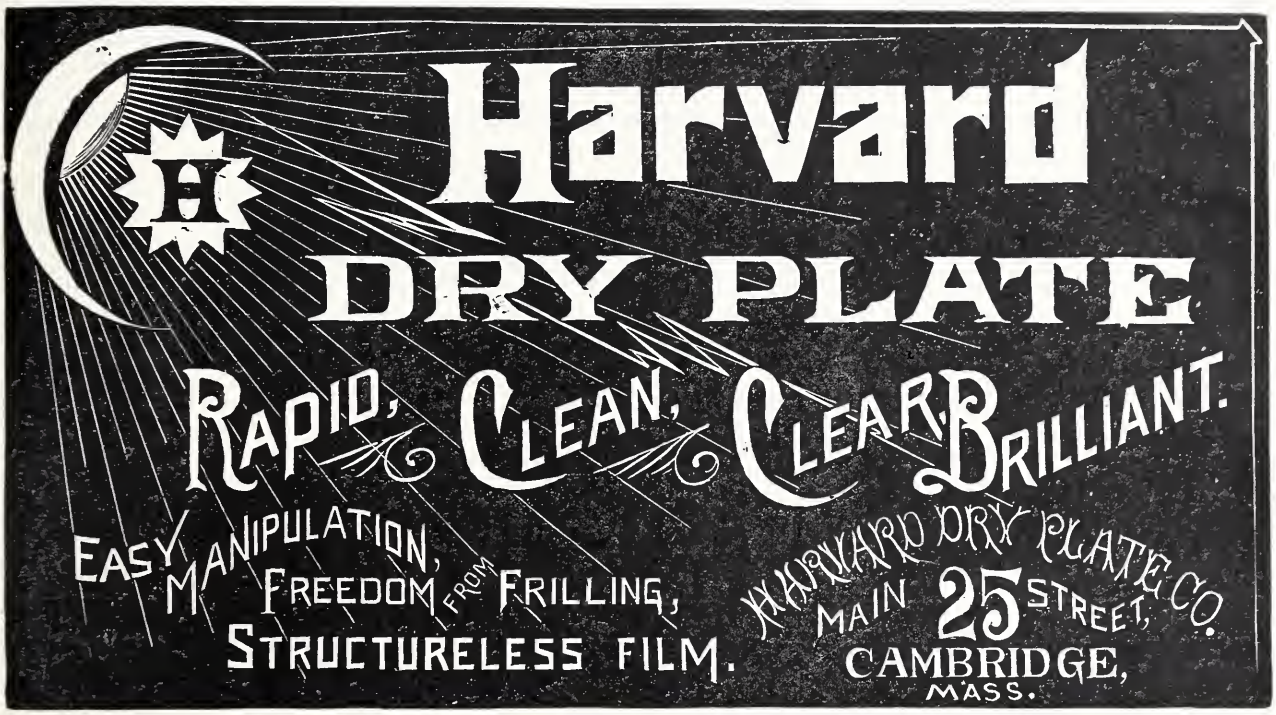
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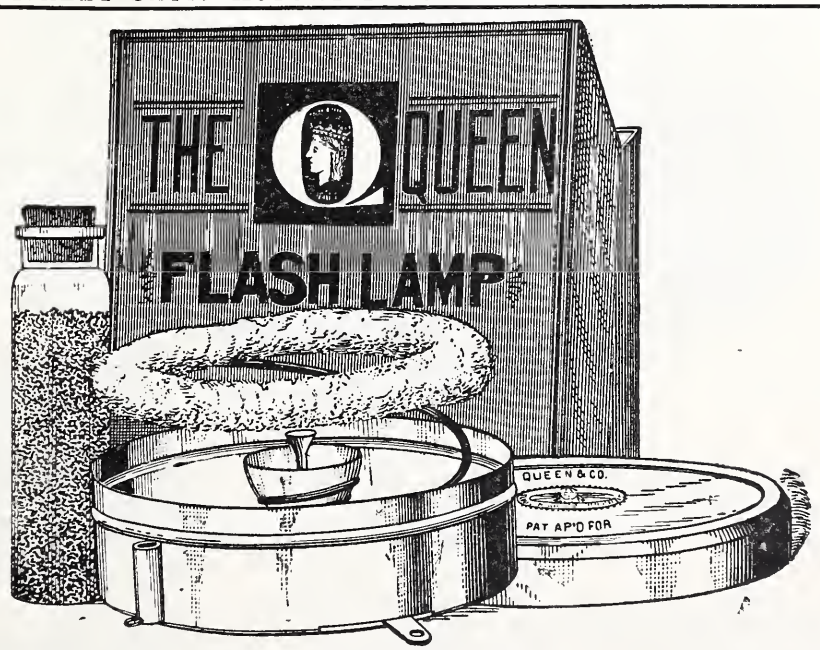
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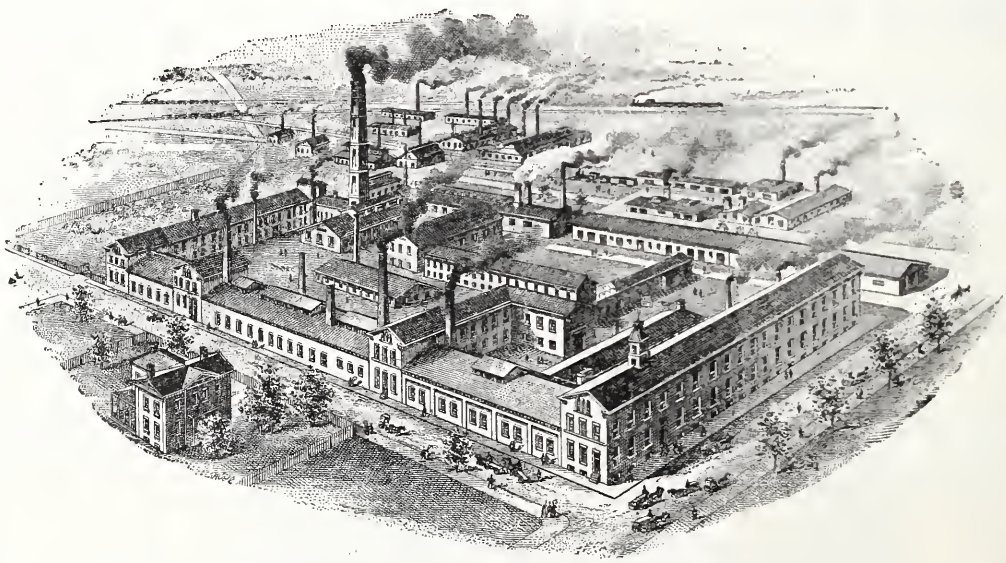
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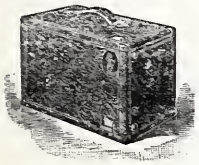
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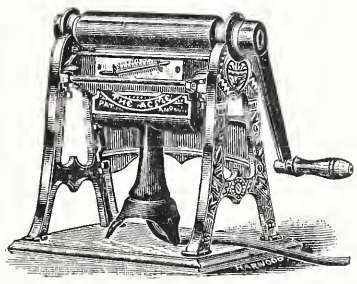
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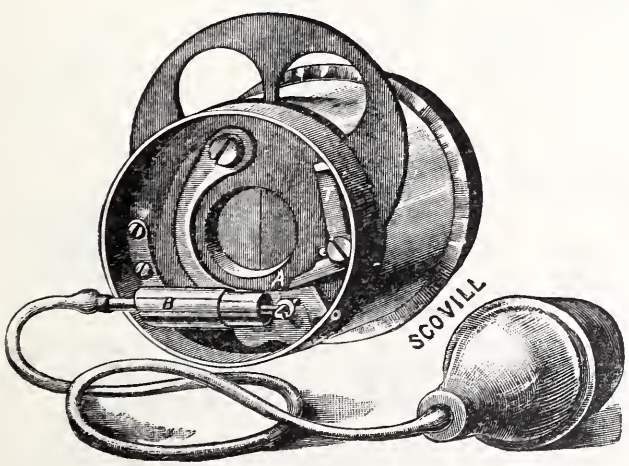
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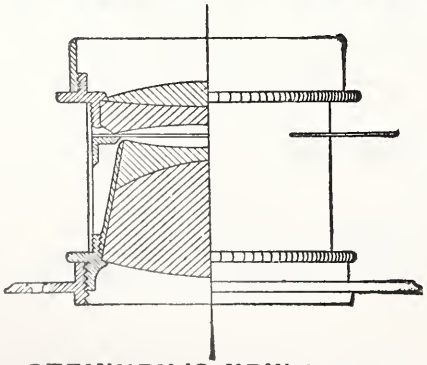
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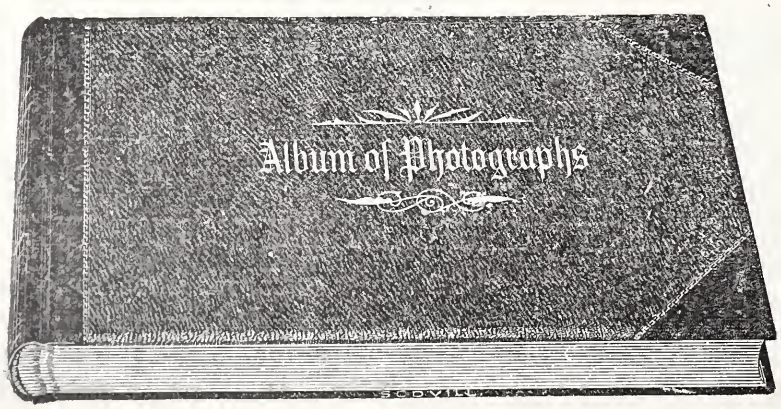
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NOTE. { **Our reduction in Prices.**
Our Paper now gives white high lights and will not yellow in Toning.

Index of our 1893 Catalogue.

If you do not get one by February 10, send in your name. It contains information valuable to every photographer, and every page should be read.

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Yours very truly,
NOTMAN PHOTO Co.,
per G. R. W. NOTMAN.

Have Discarded Albumen.

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F. R. BILL.
J. J. OVERTON.

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EASTMAN KODAK Co.,
Rochester, N. Y.,

Gentlemen:

* * * * * * * *

The paper is very satisfactory and we are with you with both feet. Have now discarded albumen altogether. * * * * *

Very truly,
BILL & OVERTON.

Solio a Bonanza.

Effingham, Ill., Sept. 5, 1892.

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Three of a Kind.

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O. D. FAIRBANKS.

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EASTMAN KODAK Co.

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From a Roman Citizen.

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Very respectfully,
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ILLUSTRATED

NEW YORK.

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION

423 BROOME STREET.

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(OVER.)



A COUNTRY ROAD

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. FEBRUARY 3, 1893. No. 594.

A COUNTRY ROAD.

OUR frontispiece this week is from a negative by Mr. Floyd Vail, a prominent member of the Camera Division of the Jersey City Athletic Club. The plate was exposed at Hohokus, N. J., in October of last year. An Eagle orthochromatic plate was used with the Suter Lens. The exposure was one second with F. 40 stop, and the negative was developed with pyro-soda.

"A Country Road" is a typical scene in this part of New Jersey, and was very happily photographed by Mr. Vail. The picture was one of the twelve for which Mr. Vail received the first prize at the exhibition of the Camera Division of the Jersey City Athletic Club, which is reported in another column, and it attracted a good deal of favorable attention during that exhibition.

THE PHOTOGRAPH OF A METEOR.

WE printed last week a notice, under the Notes and News Department, of a meteor photograph which had been exhibited by John E. Lewis, of Ansonia, before the Connecticut Academy of Arts and Sciences, at New Haven, on the evening of January 18. We have been so fortunate as to obtain the original photograph from Mr. Lewis, with permission to reproduce it in these columns for the benefit of our readers, and we take great pleasure in showing it to them in this number of the magazine.

The photograph was made Friday evening, January 13, by Mr. Lewis when trying unsuccessfully to obtain a representation of Holmes' comet.

The meteor's path in the plate is clearly marked out among the stars of Andromeda, and its intensity is indicated by the fact that, at every point, it appears brighter than any of the stars which were subjected to an exposure of thirty-three minutes.

Mr. Lewis himself did not see the meteor, and at once thought the line on his negative was a defect in the plate, and was about to destroy it, when further investigation showed its true character and value.

Prof. Newton, of Yale, discussing the meteoric photograph at the meeting referred to, spoke of its extreme scientific value, and said that while astronomical photography has shown a few light lines



which may or may not have been meteoric, nothing to compare in value with Mr. Lewis' plate has yet been made. The meteor, he said, had been seen from New York to Boston. It was very brilliant, and reached over some nineteen degrees of the heavens, breaking into half a dozen pieces, which probably fell not far from Newburgh, N. Y. But

as snow has fallen since, it had seemed useless to hunt for them.

The line indicating the meteor's path on the plate reaches across about eighteen degrees of the heavens. The stars shown are all well known, and accurately determined, and the reproduction gives a good idea of the path of the meteor in relation to these stars.

Mr. Lewis writes "that the plate used was the Cramer 'Crown,' and the lens an objective made by Harrison with an effective aperture of about 3 7-12 inches with a focus of about 15 inches. In making the photograph of the stars," he says, "this lens, with an ordinary camera box, was strapped to a reflecting telescope of 10-12 inches aperture and the instrument was kept in motion to correspond with that of the earth's rotation on its axis, by means of a slow motion screw turned by hand. I have seen some very nice reproductions of astronomical photographs in your paper," courteously concludes Mr. Lewis.

PHOTOGRAPHY AT THE COLUMBIAN FAIR.

REFERRING to the note in another column, announcing the fact that Mr. B. W. Kilburn has been granted sole right to make stereoscopic photographs in and of the Exposition Grounds at Chicago, we feel inclined to compliment the authorities who had this matter in charge. No better photographer could possibly be found throughout the broad length and breadth of this land for this particular work.

Mr. Kilburn's experience with the Stereoscopic Camera in all countries of the globe has peculiarly well fitted him for the task which he has undertaken at Chicago, and assures the public that the best and most satisfactory pictures will be made of every important (or unimportant) subject on the entire grounds. Added to a natural talent for always selecting the most pictorial views obtainable, Mr. Kilburn has a technical skill in execution born of many years active experience with the camera. In these respects he is surpassed by no photographer within our knowledge in this country. It is therefore particularly fitting that he should have been chosen for this great work.

We congratulate Mr. Kilburn on obtaining this important commission, which is an appropriate crown to his previous enterprises in photographic work, and we congratulate the World's Fair authorities on selecting a photographer so eminently qualified to perform the important duties which they have awarded to him. We congratulate, most of all, the general public who will be enabled to obtain as souvenirs of the great Fair the most satisfactory photographs obtainable of the various buildings, exhibitions and the natural scenes in the grounds.

OBITUARY.

JAMES CREMER.

IT is with genuine sorrow that we record the death of James Cremer, who passed away Wednesday afternoon, January 25th, in the 72d year of his age. He was stricken with apoplexy about noon on Wednesday and died soon after, at about 3 o'clock.

James Cremer was one of the oldest photographers in this country, and was one of the very first to take up stereoscopic work. He was identified with the progress of photography during forty years, and was always in the very first ranks. Ten years ago he was known as one of the best photographers in the country, his reputation extending far beyond Philadelphia, which he made his headquarters at that time. He retired from business in 1882.

Mr. Cremer was an Englishman by birth. He came to this country in 1843, going almost immediately to Philadelphia, where he learned his trade. He has been identified with photography ever since, and always with honor to himself and usefulness to the general public.

James Cremer's death makes a real void in the hearts of a wide circle of warm friends. He leaves a wife and four children, to whom we extend our sincere sympathies. The funeral was held at the Simpson Methodist Church, Brooklyn, Saturday afternoon at 2 P.M.

W. I. A.

AMIDOL AND PARA-AMIDOPHENOL.

A GREAT deal has been written about amidol during the short time which the substance has been among us, but with one or two exceptions only very little that is new has been revealed by the respective authors. Most that has been said of it is in substance a repetition of what we published when we mentioned the article for the first time in this country, and before any other American journal had announced it. Then we knew amidol only from hearsay, and we therefore quoted from Dr. Eder, a high authority. But what the learned author then said holds good to the present day.

Since then we have experimented with amidol extensively, and have verified for ourselves the

many advantages offered by this formidable agent. Comparing amidol with para-amidophenol, which only recently created a widespread sensation in photographic circles, we are astonished at the great solubility of the former. Para-amidophenol dissolves with some difficulty in water, but little is taken up by it, and if the temperature of the solution is reduced but a few degrees below 65 Fahr., it separates and is deposited in crystals. This property is a decided disadvantage, and, to be enabled to produce more concentrated solutions of it, experiments made have led to the introduction of chemically unreasonable compounds. Amidol is soluble in 5.5 parts of water; highly concentrated solutions can be made of it, and this is one of the most important properties in its favor.

Para-amidophenol resists oxidation; amidol oxidizes rapidly but while the para developer, having assumed a light-brown color, ceases almost entirely to act, amidol solution of dark-claret color is as active as if freshly made. This is owing to its greater solubility.

The large amount of alkali required in the para developer leads often to a reduction of the non-exposed parts of silver haloid, and consequently to irridescence of the plate or the production of fog, especially with under-exposure. The total absence from amidol of potassa, soda, lithia or ammonia is the reason for the absolute clearness of plates developed with it.

Para-amidophenol has many enthusiastic advocates, but also a great many opponents, which is probably the result of its failure to produce highly intense negatives. Similar complaints begin to be made of amidol, and quite experienced operators have already spoken of it in a depreciating manner. The cause of these failures is, however, easily understood when we consider the enormous energy of both of these agents. Beware of over-exposure, apply bromide of potassium, and intensity will build up.

With amidol development proceeds somewhat different from that with any other agent. The image flashes up almost immediately, very much as with a collodion plate on the application of ferrous sulphate, but the deposit is feeble at first and gains in intensity gradually. Bromide of potassium promotes it, and an excess of it is apt to make the negative harsh.

We have no reason to say aught against para-amidophenol; it is as good as any of the recently introduced organic compounds, is capable of producing highly satisfactory results, especially so for reproductions and diapositives, but on account of its alleged property to develop without any alkali at all, and all the consequences derived, amidol is evidently the better of the two.

Dr. Schnauss says that a trace of potassium carbonate with amidol accelerates. If that is so, and it really appears to be true, we need not be particular in regard to the purity of sodium sulphite employed with the developer. Perfectly neutral sulphite is probably made for analytical purposes only, and photographers as a general rule do not care to pay for it the high price asked. The commercial article is said to contain sometimes as much as from 10 per cent. to 16 per cent. of carbonate, and it has been proposed to neutralize this alkalinity with sulphurous acid before admixing it to the amidol solution. But we have found in practice that the commercial article does very well.

If then carbonate of potassium or sodium really do accelerate, how can acids, as has been alleged, have the same effect? We cannot confirm the accelerating action of acid. That sulphite in excess is considered to accelerate is quite another thing. Amidol oxidizes rapidly, and to retain its original force intact the addition of more sulphite may become a necessity. Atmospheric air and our common hydrant water promote oxidation, and the solutions made according to either of the existing formulas (the substance always being that of Dr. M. Andresen), the solution when freshly made is perfectly colorless, but changes to a light yellow in a short time. For that reason filtering must be done quickly, but a small quantity of solution be made at a time, and, as heat favors oxidation and amidol being so easily soluble, it is best to make the solution cold. A slightly colored solution develops quite well, but after all one perfectly clear is preferable.

Amidol solution pure and simple is reported to develop readily, but the negatives are feeble and poor printers. A pinch of amidol and a pinch of granulated sulphite in three ounces of water have given similar results. Quite naturally the solution was not concentrated enough, and, as we were told, the plate was exposed for pyro-development.

To prepare amidol developer, and to retain it in normal condition requires some care, and we advise our readers to procure the ready-made solution as sold by The Scovill & Adams Co., in preference to make it themselves.

On the development of bromide paper with amidol, we will speak at an other time, but judging from the reports of others, and the magnificent diapositives resulting, it is easily inferred that the reputation of amidol will also in this direction be fully established.

TONING WITH THE METALS OF THE PLATINUM GROUP.

THE second volume of Mr. P. Mercier's work, "Virages et Fixages," is before us.* As the first one (of which THE TIMES has published an extract, page —), it contains most practical and complete instructions on the important operations of toning and fixing positive photographs. It should be in the hands of every one who, understanding the French language, practises our art either professionally or as an amateur

To show in what a masterly manner the processes are described, we publish a translation, especially made for THE TIMES, of the chapter treating of the toning by the metals of the platinum group.

The following chapters, says Mr. Mercier, being the revised and annotated reproduction of the memoirs I presented to the Academy of Sciences in December, 1889, it is necessary to research the anteriorities to this study, and to examine the various more or less successful trials which have been previously made in order to obtain a regular toning action by means of the salts of platinum and of the analogous metals.

These trials were not at first completely successful, because they were made (this must be said) without any scientific method. Pure platinic chloride, which *ate up* the proofs, was employed; besides, proceeding by analogy, as with the most employed gold baths, researches were made by the use of various alkaline salts to obtain a bath which acted well. But the personal researches, which are further on described, have conclusively demonstrated that toning with platinum and the metals of the group iridium, palladium, osmium, etc., is subjected to this capital and very simple rule, which seems to suffer no exception: *The toning-bath compounded with the salts of the metals of the platinum group must be acid and have for its basis a salt at the minimum.*

1. The acidity is necessary; it acts, probably, by diminishing the stability of the compound which must be reduced by the silver of the proofs. With an alkaline bath the toning also proceeds, but very slowly.

2. The toning bath must contain a salt at the minimum. For when the silver constituting the image is submitted to the action of a salt at the maximum, it is transformed into chloride without any metallic deposit being formed to replace it. The reaction can be represented thus:

$$Ag + PtCl_2 = AgCl + PtCl$$

Therefore the details of the image rapidly disappears.

If, on the other hand, the silver is in presence of a salt at the minimum, it is replaced by a deposit of platinum, and the image remains unaltered while changing color:

$$Ag + KPtCl_2 = KCl + AgCl + Pt$$

Hence, the above rules give the key for a great variety of toning formulas which we can prepare beforehand, and of which we can *a priori* exactly know the activity. By using a protosalt of platinum, iridium, etc., quite free from a persalt, our proofs will never be altered, and the rapidity of action of the bath will vary according to the larger or a smaller proportion of a more or less energetic acid.

In the course of this study it will be seen that two secondary factors should also be taken into account; I refer to the action of the chlorides—which retard the decomposition of the baths of platinum, etc., as well as that of the gold baths—and also to the action of the salts and of the organic reducing acids, which tend to render the bath inactive.

We will see that some experimenters recommend formulas which contain together reducing acids and chlorides, but we cannot follow them in this manner of operating.

TONING WITH PLATINUM.

Various researches.—On the 15th of February, 1856, Mr. E. de Caranza communicated to the French Photographic Society the following formula:

Distilled water	2000
Syrupous platinic chloride	1
Chlorhydric acid	30

The proofs were immersed in this bath until the desired tint was obtained, then washed in several changes of water, then immersed in water containing chalk in suspension to neutralize the acid and finally fixed in a bath of sodium hyposulphite. This toning bath being compounded with platinic chloride, rapidly *eats up* the image.

Mr. de Caranza and other experimenters have, however, obtained proofs with good half-tints; it is probable that this result was due to the use of paper containing either citrates or tartrates; thebath, bad for the first proofs, could afterwards become excellent for the others, in consequence of the reduction to the minimum of the platinic salt under the influence of light, of heat, or simply of time in presence of the agents of reduction it contained.

According to the *Photographische Correspondenz* (1890, No. 360) it seems that at about the same time, E. Vogel had employed the potassic chloride of platinum.

* Published by Gauthier-Villars et Fils: Paris, 1893.

Mr. Swatz, of Berlin, recommended in *Photo. Cor.* 1863, the toning alkaline platinum bath thus prepared :

Platinic chloride, con. sol..... ..	15
Distilled water.....	1000
Sodium acetate.....	30

The bath was employed immediately after its preparation. The proofs strongly printed were immersed in this bath after washing, washed again, then fixed in a solution of sodium hyposulphite at 10 per cent. containing 1 per cent of sodium carbonate.

It is Mr. J. Reynolds who in 1887 first prepared a rational platinum toning bath giving very fine black tones with albumen paper.

Here is the complex formula he devised :

Platinic chloride...	0.25 grammes	= 4 grains
Water.....	1000 cub. cms.	= 35 ounces.

Neutralize carefully this solution with carbonate of potash dissolved in a small quantity of water, add 12 grammes (3 drachms) of borax in solution in a little warm water, and add afterward 30 grammes (7½ drachms) of a solution of oxalic acid at 10 per cent. and 60 drops of formic acid.

The proofs, strongly printed, are *slightly* washed, then treated by this toning bath. It suffices afterwards to fix them in a 15 per cent. sodium hyposulphite bath rendered alkaline by 5 or 6 c.c. (1 or 2 drachms) of ammonia per litre (35 ounces) of solution.

On November 29, 1888, Mr. Lyonel Clark communicated to the London Camera Club a toning process for plain salted paper. He used the solution Mr. Willis employed to develop in the cold the proofs printed on platinum paper.

This solution is thus compounded :

A.

Distilled water.....	100 c.c.	= 3½ ounces
Potassic chloroplatinite.	7 grammes	= 119 grains

For use :

Solution A.	4 c.c.	= 68 minims
Distilled water..... ...	60 c.c.	= 2⅛ ounces
Nitric acid.....	2 to 3 drops	= 2 or 3 drops

Some time afterward Mr. Gastine, chemist, communicated to the French Society of Photography a different process, in which he employed the platinic chloride partly reduced by means of the bitartrate of soda.

"One dissolves by heat, not over 50 to 55 deg. C.,

Sodium chloride.....20 grammes	= 5 drachms
Sodium bitartrate ...10 grammes	= 2½ drachms

in about 300 c.c. of water. After which are added while stirring from 5 to 7 c.c. (1 to 2 drachms) of solution of platinic chloride at 10 per cent.

"The solution becomes brown, and it seems that the platinum would be immediately precipitated, but as soon as the mixture is made enough cold water is added to make up the volume at one litre (35 ounces).

"The bitartrate of sodium can be replaced by 5 grammes (77 grains) of tartaric acid and 4½ grammes (69 grains) of crystallized carbonate of sodium; but in this case the solution is heated to boiling, and when it is cooled down at 50 deg. C., the platinum chloride is added."

Mr. Gastine afterwards recommended the following formula:

Water.....200	c.c.	=	7 ounces
Platinic chloride.. 1	gramme	=	15.4 grains
Sodium chloride.. 4	grammes	=	61.6 grains
Sodium bitartrate. 1.20	grammes	=	18.5 grains

The chlorides are first dissolved in boiling water, then one adds little by little the bitartrate while agitating. If this salt were first added the platinum would be precipitated.

The concentrated bath thus obtained keeps well. For use, it suffices to dilute it with 1 or 1½ litre of water (35 to 52½ ounces)."

Later, in 1891, Mr. P. Brunel employed a similar formula, using the same mixture of sodium bitartrate and of sea-salt with the sodium chloroplatinite.

I had already shown, in a second communication to the French Society of Photography (April 1890) that unalterable baths of platinum, osmium, etc., were obtained by simply adding to the ordinary solutions of chloroplatinites acidified by any acid, a trace of platinic chloride or of potassium osmiate, etc., or, still more simply, an alkaline chloride.

Mr. Masse has published in *La Nature* a very original formula. It is a toning-fixing bath with platinum obtained with

A.

Distilled water.... 100	c.c.	=	3½ ounces
Platinic chloride.. 1.5	grammes	=	23 grains

B.

Distilled water..... 900	c.c.	=	32 ounces
Sodium acetate cryst. 30	grammes	=	462 grains
Sodium hyposulphite 150	grammes	=	42½ drachms

The prints are first washed, then immersed in the following mixture until the desired color is obtained.

Solution A.....	10 volumes
Solution B.....	90 volumes

This bath is acid and tones very slowly. It becomes colored spontaneously. Liesegang has also recommended to replace the chloride of gold in his toning fixing-baths, by the chloride of platinum.

P. C. Duchochois.

(To be continued.)

ALUMINIUM CHLORIDE.

IN THE PHOTOGRAPHIC TIMES of December 9th, page 631, we note an article on "Toning with Aluminium Chloride," by John R. Clemons, who regards himself as being the first to use that salt in the toning bath. The fact is that Mr. Clemons' toning bath does not contain aluminium chloride or aluminium in any form. He uses it in the manufacture of the bath but none of it remains in the bath. Aluminium chloride cannot exist in an alkaline solution, as it is decomposed by all alkalies or alkaline carbonates, with the formation of aluminium hydroxide, which is insoluble in an excess of the bicarbonate. The chemical change which takes place in the bath may be seen by the following equation:

$$AlCl_3 + 3NaHCO_3 = Al(OH)_3 + 3NaCl + 3CO_2.$$

In the manufacture of Mr. Clemons' bath he removes all of the aluminium hydroxide by filtration, and the solution which he uses contains simply sodium chloride with an excess of sodium bicarbonate.

The 20 grains of aluminium chloride used (if anhydrous) will form 26.33 grains of sodium chloride, and will require 39.6 grains of sodium bicarbonate to make the change. As Mr. Clemons uses 85 grains of sodium bicarbonate, there still remains in the solution 45.4 grains of unchanged sodium bicarbonate. If crystallized aluminium chloride is used instead of the anhydrous salt, there would be only 14.27 grains of sodium chloride formed, which would require only 20.7 grains of sodium bicarbonate. This would leave 64.3 grains of unchanged sodium bicarbonate in the bath. In either case the excess of bicarbonate of soda would be sufficient to render the bath decidedly alkaline.

Mr. Clemons doubtless obtained good results with his bath, but he could have obtained equally good results by the use of sodium chloride and sodium bicarbonate with gold chloride. Some of the most beautiful prints we have ever seen have been toned in a bath containing these ingredients.

At the top of the page previously cited we find that Herr Stolze recommends the addition of aluminium chloride to the amidol developing bath for gelatino-bromide prints, stating that it retards the action of the bath and gives detail. The above equation explains the change which takes place here also, as the sulphite used in the amidol bath is alkaline, and the aluminium chloride uniting with the alkali partially neutralizes the bath thus accounting for its retarded action and possible increase in detail. The aluminium formed being insoluble we cannot understand how it can have any hardening effect upon the gelatine, and we fail to find by a few actual experiments that it has any such action.

A. B. Stevens.

THE BEST SYSTEM OF WEIGHTS AND MEASURES.

A SENSIBLE article on the Decimal System appears in the January 13th issue of *Photographic Work*:

"The Decimal System," it reads, "appears to have an origin which is rather accidental than scientific. It doubtless originated from the primitive system of counting on the fingers, and then reckoning in terms of the whole set of fingers; whereas, if the origin had been scientific, account would have been taken of the mental and mechanical convenience of repeatedly dividing by two, and the suggestion of facilitating numeration by the use of a unit to represent a series, would have been incorporated with a convenient base. As it is, accident and haste to accept the first suggestion determined our decimal system; and in spite of several attempts to formulate weights and measures on a scientific system, there seems a stronger tendency to change convenient and 'scientific' systems of weights and measures, so as to bring them into accord with an unscientifically originated base for our arithmetic than to change the arithmetic to fit the more rational system of weights and measures. * * * *

"The advocates of the decimal or metric system exhaust their strength, not in showing the advantages of the decimal system, but in showing the advantages of uniformity in standard, and the desirability of bringing the system of weights and measures into accord with the prevailing system of arithmethical notation; but before seeking to establish uniformity, it is desirable to determine on a fitting or 'scientific' basis towards which to work. It must be remembered that no illustrations or contentions derived from the present multiplicity of weights afford any legitimate argument for the decimal system, any more than they afford an argument in favor of the Babylonish or Sexagesimal system which survives in our division of the circle, and in our reckoning of time.

"Such inconvenience as is inherent to the decimal system is not so much felt in the research laboratory as in the transactions of everyday life; and one can easily trace the reason. The work of scientific research consists largely of recording observed magnitudes, as, for example, in weighing

a given mass of matter; and in such a case the minimum of manipulative work is done when the weights correspond closely to the system of arithmetic, in which the results are recorded, and by which they are brought into relation with other results; while the inconvenience of the prime number five scarcely asserts itself. Similarly, bankers realize the advantage of correspondence between money and arithmetic, and without feeling the inconvenience of the decimal system of division. In the workshop, the retail market, and, indeed, in everyday life, are the inconveniences of the decimal system most apparent. In a retail shop in France, sugar may be marked up at, we will say, 90 centimes per kilogramme, or, as it would be expressed in practice, at 45 centimes the half kilogramme; the half kilogramme, and not the kilogramme, being the usual unit in a retail shop. The customers instinctively seek to divide this quantity by 2, and again by 2; the mental conception of a division by 5 being difficult, and almost universally avoided. To serve the half of the 'pound' (or half kilogramme) the shopkeeper must use two weights (200 grammes and 50 grammes), and he finds that the already small division of money into centimes is not small enough, so a compromise of half a centime has to be made on one side or the other. When the customer demands a quarter of the half kilogramme or pound the case is even more complex, three weights being required, and, to adjust the payment properly, a coin of one-fourth of a centime (about forty to the penny) would be needed. The English system of money, with its capacity of being halved to such an extent, would certainly come as a blessing in the market-places of decimal-ridden countries.

"The proposal to adapt the sub-divisions of weights and measures to our present system of numeration, by making these weights and measures decrease in decimal progression, appears to be due to the Dutch mathematician Stevin; but neither he nor those who, in following out his ideas, introduced the metric system reckoned on the practical inconvenience of not being able to divide the measures by 3, 4 and 6 without a remainder.

"As civilization progresses, the inconvenience of the decimal system of arithmetic will probably become more and more accutely felt, and perhaps a time will come when a change will be made; but the more we assimilate the weights and measures to the present arithmetical system, so much the greater will be the effort of throwing aside the decimal basis of arithmetic, while in the meantime the world will be inconvenienced by the abolition of such weights and measures as have a scientific and not an accidental origin.

"Arithmetical systems have been worked out upon bases ranging from 2 to 20; but from the point of practical usefulness, the duodenary arithmetic, with a base of 12, seems to be the best of all these.

"The celebrated mathematician, Leibnitz, proposed for practical adoption a system with a base of two, only the characters 1 and 0 being employed, the addition of a 0 multiplying the preceding value by two, just as it multiplies by ten in the decimal system of arithmetic. The English mathematician, Hutton, writing in 1803, put the case well for the duodenary system. He says: 'If the binary system of Leibnitz is entitled to no further notice than to be classed among the curious arithmetical speculations, the case, however, is not the same with the duodenary arithmetic, or that kind which would have been brought into use if men had been born with twelve fingers. This arithmetic would indeed have been as expeditious as the arithmetic now employed, and even more so, and would have been attended with advantages which ought to make us regret that this system was not originally adopted. The duodenary system would have been preferred *had philosophy presided at the invention.*

"Perhaps, during the coming century, it will be an urgent question whether we shall take a scientific and convenient basis for our arithmetic, and then unify our weights and measures to this, or whether we shall continue to sacrifice to a system of arithmetic which may be changed at some future time.

"Uniformity in weights and measures is almost a necessity in civilization, but before making them uniform, it is essential to seek the best standards and systems."

THE POUND WEIGHT AND ITS HISTORY.

The importance of a standard of departure in determining weights and measures has attracted the attention and occupied the inventive power of the best minds among organized communities in all ages. The accuracy and uniformity of such a standard throughout a given area of populated territory is indeed a very reliable test of the quality of civilization there existing. There is a tradition that the wily French traders among the Six Nations bought furs from the simple-minded Indians by the weight of the hand. Josephus tells us of a Jewish tradition that Cain, the original fratricide, invented the primary system of weights and measures. Let us give him the benefit of the doubt, and place it to his credit upon his otherwise black and unenviable record.

There is better authority for crediting Archimedes (of lever fame) with a long step in advance, by his development of the theory of specific gravity. Newton, nearly

two thousand years later, demonstrated his great discovery of universal gravitation, and the invention of the thermometer, and barometer respectively, by the Accademia del Cimento, at Florence, and Galileo, first afforded the means for obtaining scientific accuracy in weighing and measuring. Fahrenheit, of Amsterdam, gave us the mercurial thermometer with a graduated scale, with melting snow and boiling water as a basis.

From these discoveries date the intelligent efforts by scientists to obtain greater perfection in delicate weighing instruments and fractional weights.

Some Egyptologists claim a scientific basis of weights and measures for that ancient land, citing in support of it the discovery in the reign of the Ptolemies, over two thousand years after it was built, the fact that the Great Pyramid measures exactly one five-hundredth part of a degree of the meridian. The Egyptians used the cubit and foot, the latter being very nearly the same as that now in use. These were taken with the human body as a basis.

Weight has always been determined from measure. The talent was the standard obtained from a cubic foot of water, and the mina, being one hundredth part of the talent, is identical with the modern pound. The mina varied somewhat in the several countries using it, as in the same country at different periods. The custom still existing of giving the pound two distinct forms of subdivision, one for monetary and another for commercial purposes, may be traced back into remote ages.

The earliest series of standard weights now known are two sets discovered by Mr. Layard in the ruins of Nineveh. They are now in the British Museum. William the Conqueror found the pound in use by the Saxons and decreed its continuance as the legal standard. This and other standards of weight and measure were removed by the king from the city of Winchester to the Exchequer at Westminster, and placed in a consecrated building, in charge of his chamberlains. The place of deposit is said to have been the crypt chapel of Edward the Confessor in Westminster Abbey. In 1866 the office of Exchequer was abolished, and the Standards Department of the Board of Trade was established in London, assuming charge of the standards, an arrangement still in force.

The old Saxon pound was the earliest standard of England. It was identical in weight with the old apothecaries' pound of Germany, and equal to fifty-four hundred of our later Troy grains. The pound sterling was determined from this weight in silver. Henry III. in 1266 decreed the following standards: The sterling, or penny, to weigh equal to thirty-two wheat corns taken from the middle of the ear; twenty pence one ounce; twelve ounces one pound; eight pounds one gallon of wine, which is the eighth part of a quarter. The idea of the grain was borrowed by the English from the French, and the Black Prince brought back with him from France the pound Troye, which was derived from the commercial town of that name. The use of the Troy standard was adopted by the druggists and jewelers on account of its convenient reduction into grains.

The pound avoirdupois, weighing seven thousand grains troy (Fahr. avoir-du-poids, "to have weight") first appears in use during the reign of Edward III., and it as well as the Troy pound has been employed without change ever since. In the year 1834 the English standards of weight and measure, consisting of a yard and pound Troy of brass, were destroyed by fire at the burning of the Houses of Parliament. A few years later a commission of scientific men was appointed to determine upon the restoration of the standards. This resulted in a succession of difficult problems resultant upon the oxidation to a greater or less extent of duplicates of the standard still existing, as also of the variation of the cubic inch of water as in use in different lands. A cubic inch of distilled water, weighed in air against brass weights, at a temperature of sixty-two degrees Fahrenheit, the barometer being at thirty inches, had been determined by scientific men to be equal to 252.458 grains, of which the standard Troy pound contained fifty-seven hundred and sixty.

As the unit of length was also lost a series of experiments was made in the vibration of a pendulum in a vacuum, marking seconds of mean time in the latitude of London at the level of the sea. These deductions, however, failed to be satisfactory, and the commission was compelled to fall back upon the best preserved of the duplicate standards existent. The Imperial Standard Pound is declared to be the true weight of an avoirdupois pound in a vacuum. It is a curious fact that the imperial standards of platinum (which metal is not subject to oxidation), although balancing brass weights in a vacuum, weigh in air more than one-half of a grain heavier than the latter. This is due to their greater displacements of space.

The unit of weight in the United States is a Troy pound weight obtained from England, a duplicate of the original standard fixed by the commission of 1758 and reasserted by the commission of 1838. It is a bell-shaped bronze weight of fifty-seven hundred and sixty grains Troy. It is kept in a strong safe at the United States Mint, Philadelphia, to which there are three keys in existence, one held by the director of the mint, one by a judge of the Supreme Court and one by the collector of the port. The President appoints an assay commission whose members meet at Philadelphia annually, upon February 13th, open the safe and compare the copies of the working weights with the original upon the most delicately poised balances. Working standards of weights and measures are supplied by the Secretary of State to the State governments, which in turn supply them to the sealers of weights and measures of the various counties, who must compare with the State standard once a year.

All of the scales and delicate test instruments in use by the government, not only in the Philadelphia Mint but at the several branch mints, are manufactured in this country, and as examples of wonderful mechanical machines of minute accuracy, they lead the world.—*F. H. Taylor in Mechanical News.*

HOW TO MAKE DRAWINGS FOR PROCESS BLOCKS.

WHILE the subject of preparing photo-litho and photo-zinco plates for printing from, and of making process blocks of every kind, has for some years received great attention, comparatively little has been written upon the sister art of making drawings suitable for being interpreted by these processes.

And yet this art is one of high importance, and it is becoming more and more practised every day. All of the cheap, and some of the more expensive periodicals have their illustrations made by process work; and even the

high-class monthly magazines, which not long since spent enormous sums upon the preparation of their wood engravings, have at length found it expedient to avail themselves of the great resources of photography. Speaking for myself, I have not during the past year made a single drawing that has been engraved by the old and still admirable process on wood, but all of them have been done by reproduction on zinc, both in lines and in washes, the one to imitate ordinary woodcuts, and the other that of fine wash drawings in half-tones.

For a long time the Americans held, in public estimation, the supremacy in delicacy of tone in work of the latter class; as witness, for instance, the magazines of the Harper's class; but since the introduction of process work and the grated screen, with a like quality of paper and good printing, the English magazines can now not only quite hold their own against such powerful competitors, but in some instances, perhaps rare as yet, can even surpass them.

But what I aim at present is to give in this article a few hints and directions how to convert a photograph into a line drawing which. when made into a printing block by process work, will yield prints which cannot be distinguished from an expensive wood engraving.

One must, of course, possess the ability to draw at least to some extent, and above all things he must have a faculty for tracing with accuracy, else will he be in danger of losing the likeness and expression when drawing a portrait. The hair, drapery and general surroundings are of comparative unimportance, and a clever artist will convey much of these by a few touches. If one examines the portraits of public men that are prepared for newspaper illustration, he will not fail to notice how much is left to the imagination to supply, while at the same time the characteristic feautres of the original are readily recognizable. In landscape work this is of less consequence; what is here necessary is to preserve the salient features of a scene without crowding too much into the sketch, and omitting or altering whatever is detrimental to artistic effect, such as badly placed trees or cattle.

There are two ways by which photographs may be converted into line drawings. The first is by special printing, taking care that it is not toned with gold in the usual way, but only fixed. Instead of albumenized paper, it is far better to use plain salted paper, a quantity of which may be prepared at one time, as it will keep good for a long period. This may be done by immersing it in water containing common salt dissolved in it in the proportion of about half an ounce to the pint. Some use chloride of ammonium instead of salt, but there does not appear to be much difference in the result. It should then be hung up to dry, and when quite dry placed in a portfolio for further use. To sensitize this paper, a sheet should be laid upon a piece of flat board or glass, and brushed or sponged over with a forty-five grains to the ounce solution of nitrate of silver in distilled water. There must be no metal about the brush, if such be employed in applying the silver. A few drops poured at the upper end of the sheet, which must in this case be held in a sloping direction, can be spread evenly by means of a glass rod; but, if a dozen sheets are to be sensitized at a time, it is better to pour the silver into a flat, square dish, and float the paper, smoother side down, on it for about two minutes, and then hang it up to dry. This must be done either in a room having deep yellow blinds, or in the evening by candlelight. The paper is printed in the ordinary photographic printing frame until it is very dark, and the print is then washed in two changes of water, and fixed in hyposulphite of soda, one ounce to six of water. This will greatly reduce the vigor of the print. It should remain in this eight or ten minutes, and then be well washed in water. When dry it should be flattened by a smoothing iron, and then pasted by the corners to a Bristol board for convenience in handling. It is now ready for being drawn upon.

The ink for drawing is of the highest importance; and as this applies to every system of process work, it is well to say a few words about it. It must be waterproof, and have such a degree of blackness that the faintest touch of a crow quill or a camel's-hair pencil will tell in the after-operations. That which is preferred by many process artists is the finest quality of Indian ink rubbed up in water to perfect smoothness. The water should be pure and made warm. The dish in which this is done ought to heated until it feels unpleasant when the back of the hand is pressed against it. I have said that the water should be pure, but it should also be saturated before warming with bichromate of potash, which, as every photographer knows, will render the ink insoluble after drying. If liquid Indian ink, which is sold by artists' colormen ready in a fluid form, is used, the bichromate should be added to it. When drawing with ink made in the manner directed it is the delicate, fine lines that require attention. They must be firm and black, or of a brownish-black color—which does not matter. The stronger lines take care of themselves. For myself, I prefer Stephens' ebony stain, which can be got in sixpenny or shilling bottles.

The next thing is the selection of a suitable pen, (for I will suppose that the draughtsman in making his first attempts uses a pen instead of a hair pencil). Joseph Gillott makes a variety of artists' pens, suitable for every class of work. If this is to be very fine his No. 290 will serve the purpose. His crow quill No. 659 is also recommended by a high authority. A bolder pen may be used if the photograph is of large size and has to be eventually reduced to a fourth or a sixth of its dimensions, for, as I shall afterwards show, many process blocks are from drawings which, for freedom of handling, are made more than four times the size actually required. But at present I am supposing that the finished block is of the same size as the drawing. I prefer for all-round work Mitchell's F pen, which I find is very easy to work with.

In drawing over the photograph cabinet size, which I will assume to be the head and bust of a gentleman, attention must be paid that nothing is omitted, and the direction of the lines must be studied from a good engraving.

The drawing being finished, the next thing is to discharge the photograph which has served as a base for the tracing. Having unfastened it from the bristol board to which it was attached by the corners, and ascertained that it was quite dry, place the photograph in the daylight for a few minutes if the light has not had access to it during the drawing. This renders the ink quite insoluble. Next immerse it in a saturated solution of corrosive sublimate (bichloride of mercury), which in a very few minutes will be found to have acted on the photograph with such power as to have caused it to disappear entirely, leaving only your drawing visible. Chemists tell us that the photograph

is not really dissolved away, but is only bleached the same color as the paper. But it has disappeared from view. The drawing is now washed in pure water which is free from any alkali.

Comparison must now be made between the pen-and-ink drawing and another photograph of the subject, which should be taken as a reference. A beginner in this art will possibly discover that he has omitted some important feature, not observed while the photograph still remained upon the paper, but this can only arise from carelessness, and will probably not occur a second time. He may, perhaps, also discover that, from a like cause, he has altered the likeness or expression ; but much of this latter is capable of being remedied by the application of Chinese white to stop out offending lines, and retouching them with black ink.

A second way by which photographs may by converted into line drawings is by superposing on the photograph a sheet of thin woven paper, which has been rendered temporarily transparent by brushing it over with benzole in which Canada balsam is dissolved, and making a tracing precisely in the way previously described. This tracing paper should be attached to the photograph by the upper end. It has this advantage over the other, that it enables you to judge of your progress by inserting a sheet of white paper between the photograph and the tracing, so that an examination can be made at as frequent intervals as you desire. When the tracing has been accomplished, the paper is restored to its original white state by a fresh application of pure benzole, which dissolves out the Canada balsam. Castor oil, wax, and a number of other substances may be applied to paper to render it temporarily transparent, methylated alcohol, or any other solvent of the substance employed, serving to restore the purity of the paper.—A. J. GOUGH, *in the British Journal of Photography.*

Notes and News.

The exhibition of lantern-slides, entirely consisting of work by Miss Emily V. Clarkson, which was held at the rooms of the Society of Amateur Photographers of New York, Friday evening, Jan. 27th, was a great success in every particular.

B. W. Kilburn, of Littleton, N. H., has secured the sole right to made stereoscopic photographs in and of the Columbian Exposition Grounds at Chicago. Any one can make pictures 4 x 5 inches in size, or smaller, provided a hand camera is used with a single lens and without the use of a tripod, on procuring a permit, which will cost $2 per day as heretofore announced.

A Smoking Concert will be given at the rooms of the Society of Amateur Photographers of New York, Saturday evening, Feb. 4th, at 8 o'clock. The programme will consist of lantern-slides, music, humorous recitations, collation, etc. Members desiring extra tickets can obtain them at 50 cents each by applying to the committee at once, Frank C. Elgar, C. C. Roumage, H. S. Mack.

New York Camera Club.—The illustrated lecture by Mr. Frank La Manna, which occurred Monday evening, Jan. 23d, was a great success. Mr. La Manna, always good, was at his best, and both the lecture and the slides were greatly enjoyed by a large audience. The slides were made from the lecturer's own negatives, and were all warmly applauded as they were projected upon the screen. The Club is to be congratulated on the success attending the delightful entertainments which it has inaugurated.

To Whom it May Concern.—For a long time it has been my intention to retire from active business, and for several years I have been making arrangements to that end. The success and perpetuity of the enterprise which is conducted under my name I have desired to see fully established, and can now safely say that such is the case. For some years I have taken the greatest pains in instructing my former partners in all of the mathematical and optical questions involved, and necessary to the production of a high grade of optical instruments. I am now happy to say that I believe them fully competent to manage the business without further instruction. However, I still have an active interest in the success of the concern and will continue with it as consulting optician.

Very sincerely, ERNST GUNDLACH.

Notice is hereby given that the co-partnership heretofore existing between Ernst Gundlach, Henry H. Turner, John Zellweger and John C. Reich, has, by mutual consent, been discontinued by the retirement of Ernst Gundlach from the firm. The business will be continued with the same firm name by the other three members, who will settle all the accounts of the old firm. Mr. Gundlach will still retain a connection with the concern as consulting optician.

HENRY H. TURNER, JOHN ZELLWEGER, JOHN C. REICH.

Phillips Brooks' Photographs.—Before Dr. Brooks became bishop his photographs, though much in demand, could not be had by every one. He was much averse to having them placed on public sale, and once when he was asked to allow some to be sold at a fair in aid of St. Andrew's Mission, he showed some disinclination to comply and remarked that they would not realize much. This was met with the statement that it was expected that about $50 would be the result of such a sale. The next day Dr. Brooks sent his check for $50 to the managers of the fair, but the photographs were not forthcoming. At length he was prevailed upon to sit for his picture, just before Christmas in 1887. Three positions were taken and all were perfectly satisfactory, but the picture which proved the most attractive to the public, and the one which his parishioners greatly admired and were eager to possess, is the one showing the full face. During the eight months subsequent to the development and finishing of the negatives more than 3,000 photographs were sold. Two orders were for 500 each. There has been a large sale ever since of all three positions, but the one especially sought after is the front position. In June, 1891, a private business arrangement was entered into with the photographer whereby a royalty was to be paid on each picture of the bishop sold, the proceeds to be used for mission purposes. This arrangement has been carried out according to the wishes of the bishop and his associates.

Whether a similar arrangement was entered into with the London photographers, who secured two fine negatives of the bishop while in England last year, is not known.

Probably not. One of the pictures taken by the London artists represents Dr. Brooks sitting in a chair, with an open book on his knee; the other shows him standing. Both are considered good likenesses. Conspicuous on each photograph are the lines, "The Lord Bishop of Massachusetts," "The Rt. Rev. Phillips Brooks, D.D."—*Boston Transcript.*

Photographic Societies.

CAMERA DIVISION, JERSEY CITY ATHLETIC CLUB.

THE photographic exhibition of the Camera Division of the Jersey City Athletic Club, which was held from Jan. 16th to 21st, was a great success, both in the number and the character of the exhibits. It was the first appearance of the Division before the Club, and it proved a great attraction, not only to the Club members but especially to their lady friends. While the exhibition was to be held for only one week, at the request of the officers of the Club the photographs will remain on exhibition until after the Club's annual reception, to be held Feb. 8th, the chief social event in Jersey City society each year.

The awards were made by Mr. A. Clinton Wilmerding, of the Obrig Camera Co., New York. His decisions were well made and afforded entire satisfaction.

The prizes were awarded as follows: First, for best single picture, Frank L. Clark; second, for second best single picture, Geo. L. Wilms. First, for best exhibit, Frank L. Clark; second, for second best exhibit, Geo. L. Wilms. First, for best exhibit 4 x 5, Frank L. Clark; second, for second best exhibit 4 x 5, H. C. Nichols. First, for best exhibit 5 x 7 or 5 x 8, Geo. L. Wilms; second, for second best exhibit 5 x 7 or 5 x 8, Geo. L. Wilms. First, for best exhibit 6½ x 8½, Floyd Vail; second, for second best exhibit 6½ x 8½, D. G. De Witt. First, for best exhibit lantern-slides, Geo. L. Wilms.

PHOTOGRAPHERS ASSOCIATION OF OHIO.

THE officers of the Photographers Association of Ohio met in executive session, at Columbus, January 2, 1893. After receiving the reports, etc., from the officers of last year, President Schneider took hold of matters in such a manner as to insure success for the coming year.

Each member of the Executive Committee pledged himself to do all in his power to make the Convention of this year a grand success.

At the last Convention it was decided to leave the selection of the place of meeting for the next Convention, as well as setting the time of meeting, to the Executive Committee. It was decided to hold the next Convention at Columbus, that city being centrally located, and having ample accommodations in the way of buildings in which to hold the Convention, and hotel accommodations for all who may attend, and they are all going to attend this year for it is the intention of the committee to make the Convention so attractive that none will stay at home.

The time was not set for holding the Convention; it was thought best to postpone the setting of the date until another meeting to be held some time in March, when President Schneider, who is acting as a committee of one to see what is the best building that can be had in which to hold the Convention, will report. At the same meeting the programme for the Convention will be arranged as fully as possible.

The officers desire to have a larger display of work than has ever before been shown at a Convention, and expect to have at least six cabinets from every photographer in the State, and as much larger work as can be had.

The report of the Secretary and Treasurer of last year shows:

Total receipts for the year.....	$935 10
Expenditures, current expenses.....	626 18
Leaving a balance on hand of.....	$308 92

Is not this a pretty fair showing for our Society? Let every photographer in the State make it a matter of business with him to be on hand and to be one of the Association, and it is bound to grow and be beneficial to all. Other States are watching us; let them be able to point to us with pride.

It might be well to name the officers of this year, which are as follows:

President, J. S. Schneider, of Columbus; First Vice-President, Roy Hume, of Lima; Second Vice-President, W. M. Hollinger, of Dayton; Secretary, L. C. Overpeck, of Hamilton; Treasurer, J. C. Horning, of Massillon.

L. C. Overpeck,
Secretary.

The Editorial Table.

The Year Book of Photography and Photographic News Almanac for 1893, edited by T. C. Hepworth. London: Alexander & Shepheard.

This valuable Annual comes to our table filled as usual with much useful information. The present volume is a decided improvement on its predecessors, both as regards the reading matter and its illustrations.

The frontispiece is an attractive figure picture, entitled "A Gleaner," from a negative by the editor, and is printed by the collotype process.

The contributed articles are for the most part of a practical nature, "guides to practice" for both amateurs and professionals.

While the book has a large number of advertisements, the predominance of the advertisements over the reading matter is not so conspicuous in this Annual as in some of the other British year books. The price remains the same, 50 cents per copy, and may be obtained of The Scovill & Adams Co.

Practical Pocketbook of Photography, by Dr. E. Vogel. Translated by E. C. Conrad. New York: Macmillan & Co.

A very correct translation of the original in the German language. In its present form the book is the more comprehensive to English speaking people, weights and measures are given in the metric system as well as in the English and American.

Deutscher Photographen Kalender, 1893. Edited and published by Karl Schwier, of Weimar.

This highly interesting and instructive almanac appears this year in much improved and augmented form. Besides the calendar, useful tables, and statistical reports, it contains an article on the "Progress of Photography," written in a masterly manner by the able Dr. Bruno Meyer.

The list of German and Austrian photographic societies and of their members is complete and a great aid to foreigners, who in course of business have to correspond with German photographers or manufacturers. A collection of useful receipes and formulas is bound separately in pamphlet form, and carried in a little pocket attached to the book.

A splended photogravure portrait of Emperor William II., and a Lichtdruck, flowers of the lime tree, embellish the book.

The January number of the *Canadian Photographic Journal* contains as a frontispiece a portrait of Mr. Geo. W. Gilson, the accomplished editor of the magazine.

New York Engraving and Printing Company have issued an elegant calendar of the pad description with an interesting photo-engraving as a heading on each month. Each picture is different from all the others and is appropriate to the month which it illustrates. They are for the most part from nature, and all are from photographic negatives.

The frontispiece of the February number of the *Magazine of Art* is an original etching by David Law, of his own painting, "After the Festa." The opening article is on "Current Art," by Claude Phillips, and is bountifully illustrated with engravings from some of the most notable paintings of the day in England. All art workers will be interested in Walter Crane's paper on "Design," which he has illustrated with careful drawings.

A Most Beautiful Calendar.—The Columbia cycling calendar for '93 is the most exquisite and truly artistic of practical calendars for the year. It begins with February, '93, and ends with February, '94. It consists of a circular piece of cardboard, 47 inches in circumference, the calendar picture being framed with a reproduction of the pneumatic rubber tire. The picture is in fifteen water colors, and represents a country scene, with a bicycling couple in the foreground resting in a cosy nook after a delightful ride. The original picture is by a celebrated American artist, and the reproduction is so close to the painting that one hardly realizes that the delightful tones and shades are not the true brush-marks. This calendar, issued by the Pope Manufacturing Co., of Boston, is adapted for the library, dining-room, parlor, or business office.

Irishman (to photographer)—Can yez make me nose a little smaller an' straighter in me photo than it is on me face?

Photographer—Oh, yes, sir, By means of retouching I can make your nose almost any shape.

Irishman—That's illigant! Phwat wud yez charge to retouch me *rale* nose?—*Pick-me-up.*

Queries and Answers.

18 ORANGE, N. J.—Will you kindly give me a formula for frosting glass?

18 *Answer.*—We answer this query—from an article in *Pharmaceutical Era*, viz.: "The frosty appearance of glass which we often see, where it is desired to keep out the sun or 'man's obscuring eye,' is done by using a paint composed as follows: Sugar of lead, well ground in oil, applied as other paint, then pounced while fresh, with a wad of batting held between the finger and thumb.

"Dissolve Rochelle salts in gum arabic water; let it stand over night, and after cleaning the glass off well, flow the solution on so that it will not run; lay the glass flat, if convenient, and when it commences to set take a pointed stick and dot it in rows to suit the taste; put the dots about 1½ inches apart. If you wish it colored use anilines—red, blue or green, and gamboge for yellow or gold color, then flow on a thin coat of damar varnish, and it is finished."

19 OLD WITCH HOUSE, Salem, Mass.—I wonder if the Chautauqua School of Photography adheres to the old "pyro" development. I have tried eikonogen and hydrochinon, separately and combined, but cannot get sufficient printing intensity with either of them. The other developer with the long name I have not tried, but I am shy of rodinal, as it runs away with me, and the plate, too. Now, Scovills are recommending amidol. What is your opinion about it?

19 *Answer.*—The Chautauqua School of Photography tries and tests everything new in photography; at least the instructor does. Whatever he finds practical is recommended to the students, and the developers used mostly by them are now a combination of eikonogen and hydrochinon, para-amidophenol and amidol. The great virtue of amidol is the total absence of fog on negatives or diapositives developed with it. Rodinal has never been endorsed by the school, although the hydrochlorate salt of para-amidophenol finds many advocates among the students.

Why do you not join the Corresponding Class, C. S. P.? Even if you are a professional photographer, it can be of much benefit to you.

20 E. D. C.—Will you please kindly inform me, through the "Queries and Answers" of THE PHOTOGRAPHIC TIMES, the following: Portrait Artist.—Can you inform me what the paint used for painting photographic backgrounds, etc., is composed of and in what proportions?

20 *Answer.*—Mix whiting with hot and strong glue water, to suitable consistency, and add lampblack India red, sienna, or any other color to attain the desirable tone.

Apply the color while still warm with a broad bristle brush. While wet the color is considerably darker than after drying, and it is advisable to apply to sampling first.

21 "AMATEUR" asks for information in regard to the price of a Henry Clay without lens, and with different makes of lenses?

21 *Answer.*—As he does not state the size of Henry Clay he has in mind, we cannot give him a definite reply. We advise him, however, to send to The Scovill & Adams Co. for a "Henry Clay Manual," which contains a complete price list.



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AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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"Yours truly, GAYTON A. DOUGLASS.

"CHICAGO, January 23, 1893."

The Chemistry of Photography, by W. Jerome Harrison; No. 41 of the Scovill Photographic Series. New York: The Scovill & Adams Co.

"This is a book that should be in the hands of every person who wishes to make a success of photography. As a source of thoroughly practical instruction and as a useful reference book on the 'wherefore' of all matters photographic it is invaluable. In its pages will be found the right way of doing almost everything a photographer has to do with his plates, papers, developers, baths, waste materials, etc., and the reasons for so doing. It is a work that will bear constant study on the part of the hundreds of to-day's photographers who are following almost blindly the 'rule of thumb' and the 'directions on the package.' To them and to all interested in the art a work of such sterling worth as Mr. Harrison has compiled will prove, if carefully studied, a school of instruction and a valuable aid in surmounting the many difficulties encountered in the studio or on the field in a chemically proper and an economical way. The book is divided into thirty-six chapters, treating in a thorough manner such subjects as the chemical elements, laws and theories and manipulations, chemical books and apparatus, preparation of glass, treatment of residues, tables of chemical elements and compounds commonly employed in photography, the chemistry of all developers and developing processes, the chemistry of all printing processes, reducing and intensifying processes and their chemistry, toning of photographs, chemistry of fixing processes and of hypo-eliminators."—*The Canadian Photograpic Journal.*

The Chemistry of Photography.—"I think the book supplies a long-felt want, and that you have put it upon the market in a style unequalled by any other photographic publisher."—F. J. HARRISON.

"I have tried the new Henry Clay Stereoscopic Camera. It works like perfection. In using this grand instrument, I can make negatives successfully without half trying. It works like a thing of magic."—B. W. KILBURN.

"The Acme Rotary Burnisher is a splendid machine."—B. W. KILBURN, Littleton, N. H.

THE AMERICAN ANNUAL.

"The illustrations are simply immense and the binding makes it one of my show volumes."—T. E. HUSTON.

"It is all in all an adequate record of photographic progress during the last year, and those who are interested in the art, will find it all they could desire."—*The Boston Herald.*

"It is a very readable book. In character it is the same as heretofore, but with a greater number of articles than heretofore, and thoroughly revised as to the portion devoted to formulas and general information."—*The Photo American.*

"This is the largest 'Annual' published and we might also say the handsomest, and containing the largest number of illustrations, which are of high order, executed by the different processes. This 'Annual' does honor alike to the editor, publishers, and book-maker."—*St. Louis and Canadian Photographer.*

"This handsomest of Annuals * * * * as usual is profusely illustrated with large process illustrations of a great variety of subjects. It is crammed with articles upon photographic matters, containing useful and interesting information, and is beautifully got up and well sent out."—*Photography*, London.

The Most Beautiful.—"This book is the most beautiful illustrated volume yet published in America. * * * It is a most beautiful addition to any photographic library, and, we must admit, is far in advance of any Photographic Annual yet published in this country" (in England).—*The Hand Camera and Lantern Review.*

"In the direction of illustrations, this year's Annual is by far the best one published in any country. The collection is simply superb. The usual articles, formulas, tables, complete a volume that should on no account be missed. It is at once a work of reference, and an ornament to the book-case."—*Photographic Review of Reviews.*

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NEGATIVE RETOUCHING.—Out of town orders promptly returned; work first-class; lessons given; retouching medium for sale. S. BOWEN,
68 W. 39th Street, New York.

WANTED.—A few good stereoscopic negatives; must be sharp winter and summer scenes, childhood or comics. Send unmounted prints and prices to the LIVERPOOL STEREOSCOPIC VIEWS COMPANY, Low Hill Post Office, Liverpool, England.

WANTED to complete File, THE PHOTOGRAPHIC TIMES for May 30, 1890, and September 12, 1890. Send to H. McKIM, JR., 33 W. 20th Street, New York.

FOR SALE.—The Photographic Stock business, formerly owned by E. J. Partridge. This is a good business in a good locality for any one wishing to establish themselves permanently. For full particulars apply to
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WANTED.—THE PHOTOGRAPHIC TIMES of September 4, 1891, (No. 520). HERBERT F. SMITH, Secretary Syracuse Camera Club. 322 South Salina Street, Syracuse, N. Y.

E. W. NEWCOMBE & CO. wants a May 30. 1890, copy of THE PHOTOGRAPHIC TIMES.

PHOTOGRAPHERS.—First-class Photo Studio at New Rochelle, N. Y.; fine rooms; wide entrance; one flight up. Rent $25. Will sell very cheap for cash, or on easy terms, or rent furnished.
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FOR SALE AT HALF PRICE.—Microscope with two objectives; one one-fifth students Bausch & Lomb, and one Zeiss A, suitable for photo work.
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FOR SALE.—A first-class photograph gallery doing a nice business; has the largest and best location in the city. For particulars call or address
J. NEUMANN, 403 Main St., Buffalo, N. Y.

A GENUINE BARGAIN.—Bound volumes of the *Philadelphia Photographer* for 1885 and 1889, each year complete in one volume and bound in full morocco leather. Original cost, $7 each. Will sell for $3 per volume. Sent to any address by express on receipt of the amount. *Anthony's Bulletin* for 1886 and 1889, bound in red cloth, uniform with the publisher's binding, each year complete in the one volume with all the illustrations. Cost $6 per volume. Will sell for $2 each. Address
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PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never lose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
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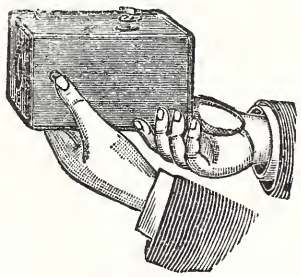
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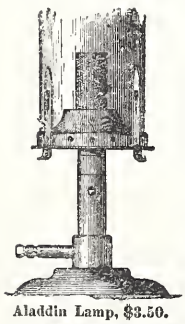
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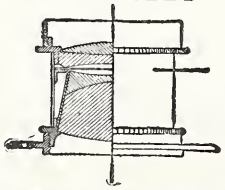
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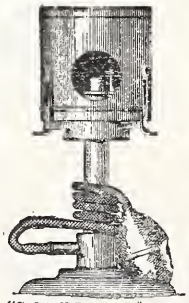
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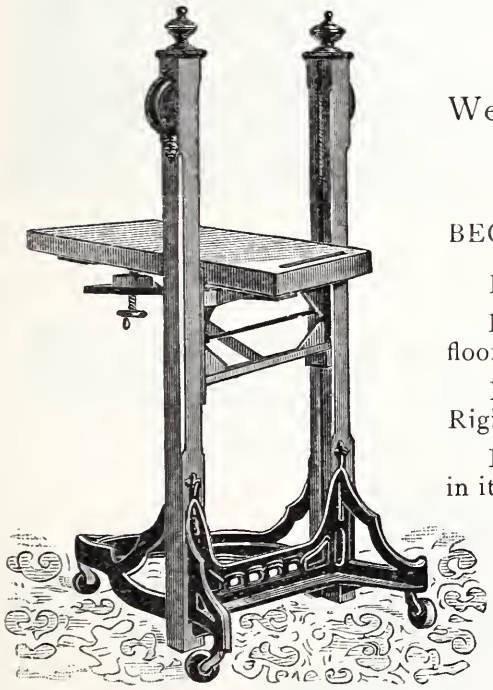
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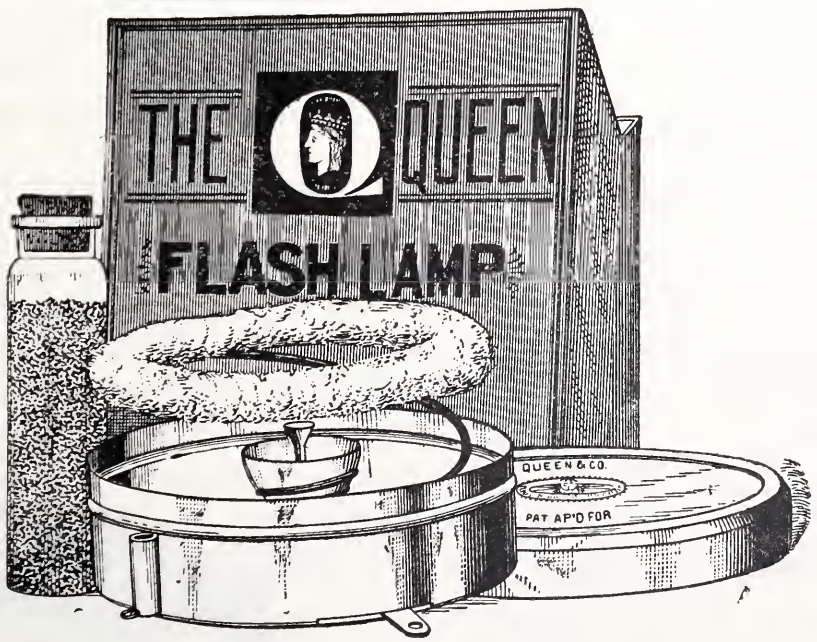
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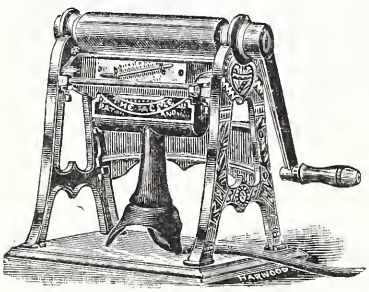
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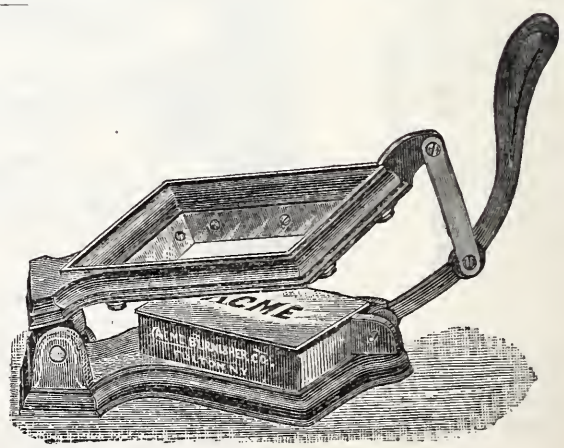
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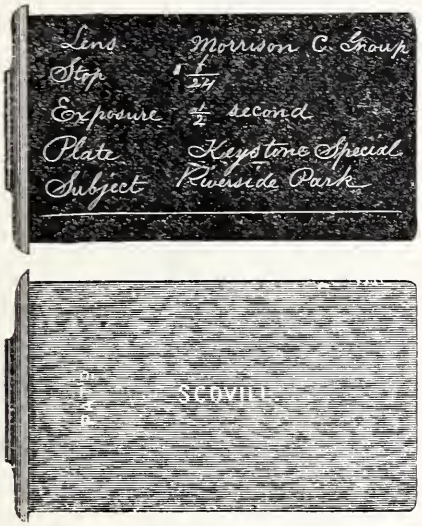
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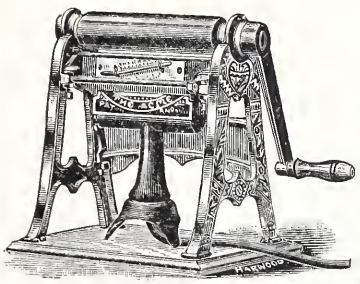
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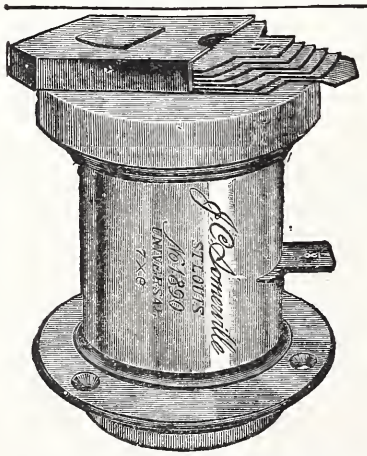
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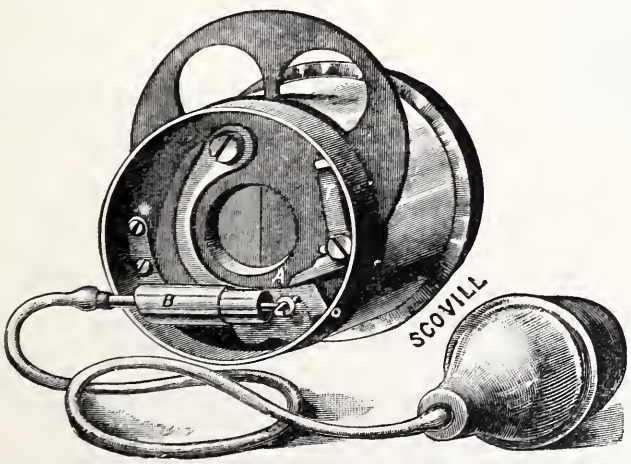
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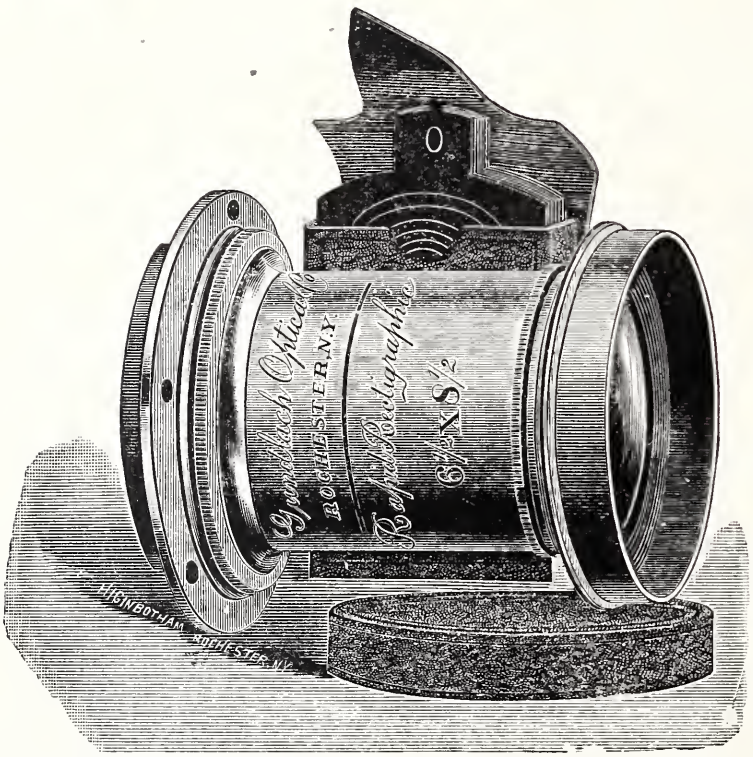
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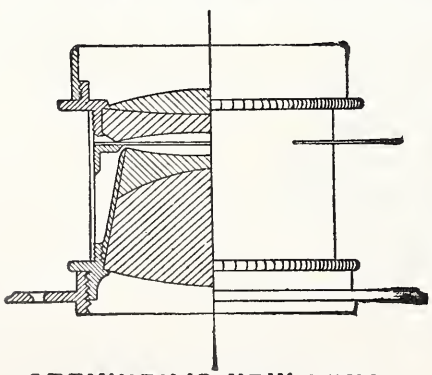
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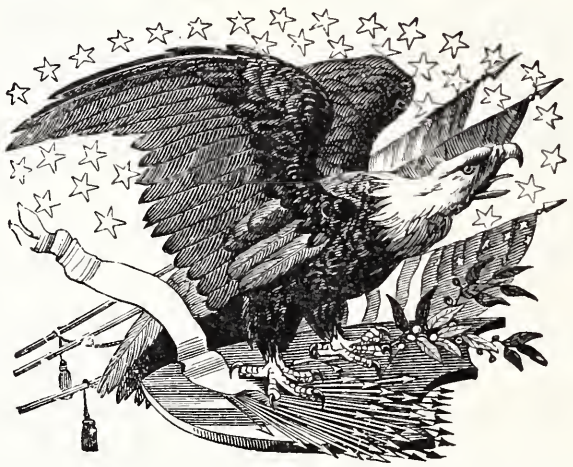
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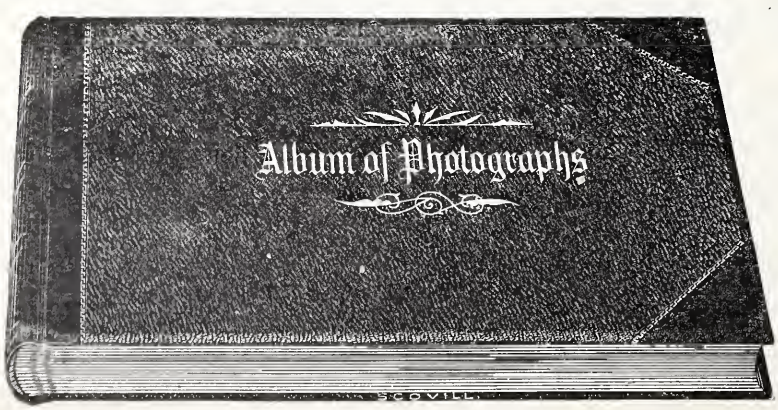
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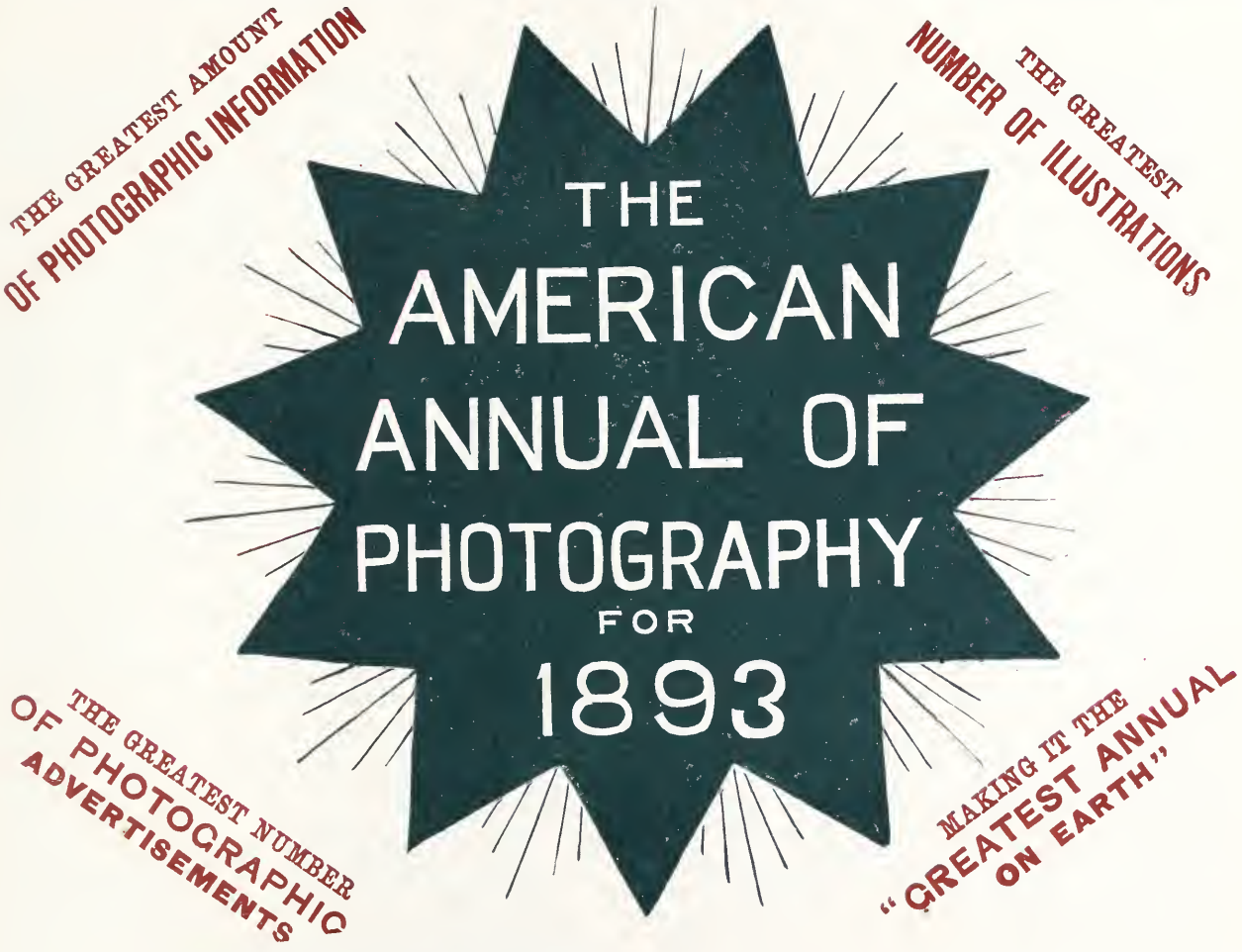
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In the original subject, which is St. Paul's Church in Jersey City, the sun shone directly through the chancel windows, as may be seen by the shadows on the floor in both pictures. With the ordinary Weustner's Eagle Plate, which by the way is an excellent plate for ordinary purposes, we find considerable halation about these windows, though it is by no means as bad as it might be. In the picture reproduced from the negative on the Imperial Non-Halation Plate, we find absolutely no halation at all, though the same shadows on the floor show that it was made at the same time with the sun shining as strongly in the same direction. This shows at a glance just what Weustner's non-halation plates will do.

Both negatives were made by Mr. Weustner Dec. 26th, at 11 o'clock in the morning, when the sun was its brightest. In addition to the strong sunlight which shone directly through the windows, there was a strong reflection from a red painted school-house directly opposite these windows, and there was snow upon the ground, which reflected a great deal of light.

The exposure with the ordinary plate was five minutes. With the non-halation plate seven minutes exposure was given. Both plates were developed in the same dish at the same time with Dr. Andresen's amidol developer, as prepared and sold by The Scovill & Adams Co. A Gundlach rapid rectigraph No. 3 was employed with stop $f/30.7$.

The halation apparent on the picture made with the ordinary plate would have been much worse if the greatest care had not been taken to avoid this result so far as possible. Mr. Weustner did not try to make as bad a plate in one instance as he could, in order to make the contrast greater when compared with the result on his non-halation plate; but he tried to make as good a picture as he could under the circumstances with his regular plate, and to that end made the exposure as short as possible. Five minutes was none too long to bring out properly the detail in an interior of a church, as is shown in the result. With the Imperial non-halation plate a longer time was required, of course, as it works a little slower on account of the orthochromatic emulsion which underlies the ordinary emulsion. A better result could not be desired than we have in the reproduction from this negative. The detail is all out, and the picture is evenly and pleasantly illuminated. Though the camera is pointing exactly in the same direction with the sun shining full upon it and the exposure was seven minutes in duration, we have absolutely no halation whatever. This is a perfectly fair test, and shows in a practical manner just what Mr. Weustner's new Imperial non-halation plates will do.

THE PRINT INTERCHANGE.

In our issue of January 13th we printed a short editorial note entitled "Will you exchange prints," which invited the comments and suggestions of all those of our readers who were interested in the subject. Since then we have received a number of responses and all of them indicate an enthusiastic interest in the scheme.

As a free discussion will do much toward perfecting the arrangements of such an interchange, we print herewith extracts from several of the letters which have been received. We may repeat what

was said in the editorial above referred to that this matter is entirely in the hands of our readers. If they desire such an interchange, we shall be pleased to promote the matter, so far as lies in our power, by publishing the addresses and wants of those who desire to exchange prints with their fellow readers of the magazine. But let us perfect our plans before going ahead, and one of the best ways to do this is to have a full and free discussion by all those who are at all interested in the project.

Geo. B. Bruce, of Thornburg, Iowa, writes: "Your question, 'Will you exchange photographs?' should be answered in the affirmative by every amateur that reads THE PHOTOGRAPHIC TIMES. I am very much in favor of the plan, and earnestly hope that you will receive the encouragement that will make it a permanent department of THE TIMES, then, with THE PHOTOGRAPHIC TIMES, "The Times Annual," and "The Times Photographic Exchange," what more could we ask for?

Dr. H. C. Stiefel, of Rose Ave., Jersey City, N. J. replies:

"1. The general scheme of exchanging, etc., is an excellent one.

"2. I would, most decidedly.

"3. No. 1 covers the ground, monthly supplement."

M. R. Coleman, of Kidders, N. Y., writes:

"Your article on 'Will You Exchange Prints' in the issue of THE TIMES for Jan. 13th I was very glad to see.

"You ask, 'Are you interested,' and most assuredly I say I am.

"Now in reply to your queries:

"1. Most heartily.

"2. Most assuredly.

"3. Will leave this to better heads than mine."

J. C. Hadley, 368 Bowen Avenue, Chicago, Ill., writes as follows:

"Being a constant reader and subscriber of your most valuable and (to me) interesting journal, in answer to your question, 'Will you exchange prints?' I beg to say it would be a pleasure to do so. I think your kind offer of great value as a matter of comparison and study. To your first and second questions, I answer yes. I believe your suggestion to publish a list of wants and offers, with addresses, you would be doing half the work for those of your patrons who desired to avail themselves of your kindness.

"I have a Henry Clay 5 x 7, Zeiss anastigmat lens, with which I hope to do some fine work. I do my work complete from beginning to finish. Enclose sample. I would suggest exchanges be marked on back like sample."

Clarence Morrow, 1316 N. H. Street, Richmond, Ind., incloses sixteen cents in postage stamps in payment for the first exchanges which he hopes to receive, and says he is "very much interested in this matter," and thinks it a very good plan. "I have been desirous of exchanging for some time," he continues, and "have advertised in your paper some time since." "I would prefer landscapes, while others perhaps would wish something else."

James W. Duffy, Secretary of the California Camera Club, speaks for "two hundred interested amateurs," and writes as follows:

"In yours of the 16th inst. (I think), there is a very excellent article suggesting an exchange system whereby the amateurs of the country would not only be enabled to obtain samples of each other's work, but which as a collection of photographs would, no doubt, prove of much interest, aside from their artistic or technical features.

"We have here a club of nearly two hundred active members, and in their collections of negatives there are hundreds of subjects, from the sublime to the ridiculous, embracing views characteristic of California, and even the whole Pacific Coast from San Diego to Alaska. There are studies innumerable, bits of street life, marine views, in fact, nearly everything. But what good are those negatives? Perhaps outside of a few prints for the owner or a friend, they have never done other service.

"This is the condition of things out here. Of course, not living in the 'effete' East, I am not prepared to assert that it is pretty much the same there, but I *think* it is.

"Now, it seems very possible, that if you take a hold of this proposition, and through the photographic societies, etc., get it fairly under way, it will prove a big thing. I would suggest that in offering prints for exchange, the owner should state size, subject, kind of print, mounted or not, and if mounted, on what kind of card or mount.

"Almost all the above applies equally well to lantern-slides, which now seem to be more popular than ever."

PHOTOGRAPHY ABROAD.

PARA-AMIDOPHENOL DEVELOPER.

A.

Para-amidophenol hydrochlorate.	1
Sodium sulphite cryst.	4
Water.	200

B.

Sodium sulphite.	4
Caustic potash.	3
Water.	200

THE GETTY CENTER
LIBRARY

For instantaneous exposures mix equal volumes The image is developed in from eight to ten minutes.

For time-exposures dilute the mixture with three times its volume of water.

The images impressed on bromide paper are developed with a developer compounded as follows:

Para-amidophenol hydrochlorate	4
Sodium sulphite cryst	45
Sodium carbonate	30
Water	1000

The whites of the images developed by this bath are quite pure, and the blacks assume a very fine bluish-black tint in the deep shadows.—*Ganiehot.*

***

Toning Bath for Bromide Paper.

Chloride of sodium	8
Chloride of gold	0.05
Sulphocyanide of ammonium	2
Water	100

This bath works uniformly, and does not bleach the proofs. The proportion of gold may be reduced one-half, and the bath will still possess a sufficient energy. It may be employed to tone diapositives.—*Albert Dupuis.*

***

About Toning Aristotype Paper.

The first condition of success in employing toning baths for aristotype paper is that they do not contain any sulphocyanide of ammonium. When treated by alumed water before and after toning the proofs are very clear and do not fade (?). As a toning bath the following is employed:

One dissolves in 100 grammes (3½ ounces) of water 1 gramme (15.4 grains) of chloride of gold, and pours this solution in one litre (34 ounces) of water containing 250 grammes (63½ drachms) of hyposulphite of soda. When the solution is clear 25 grammes (6½ drachms) of extract of saturn are added (this extract is obtained by boiling 9 parts of water, 1 part of litharge and 3 parts of neutral acetate of lead). When this toning bath is new it does act by sulphuration (?), which unavoidably occurs if the bath has been used several times.—*Journal des Inventions Nouveles.*

***

Night Effects.

The negatives to obtain night effects should be exposed for a short time and made late in the afternoon, or early in the morning, when the shadows are very long. The proof should be deeply printed and toned to a grey ash-colored tint. When it is fixed and washed it is immersed in one of the following liquids:

For dark proofs the bath is prepared by adding, drop by drop, to the water an aqueous solution of yellowish-green aniline, so as to obtain the tint which is thought the most proper. The proof is immersed in this bath for a period of from eight to ten minutes, after which it is rinsed and dried.

For light proofs one operates as described above, but instead of yellowish-green the bluish-green aniline is employed.

The aniline colors found in commerce which are used to color photographs are very good.—*Loc. Cit. A. Noël.*

***

Intensifying the Negatives and Diapositives on Gelatino-Silver Bromide.

The classical method of intensifying with bichloride of mercury and ammonia too often yields yellowish negatives, intense and harsh. One can remedy these defects in the manner following:

The negative, fixed and washed, is immersed for a few moments in the solution of bichloride of mercury, then carefully rinsed for several hours in water often renewed. When the excess of bichloride of mercury is eliminated the plate is placed in a bath of hydroquinone and sulphite, old or new, which gives to the image a fine bluish-black tint quite favorable for printing.

The positives on gelatino-bromide, which, generally, are gray, without vigor, are intensified in the same manner with the greatest ease.—*George M., in the Revue des Nouveautés*

Negatives fixed in the alum or acid sodium hyposulphite bath are intensified with difficulty. To eliminate the last trace of *hypo* from the film before the mercurial treatment, it is advisable to immerse the plate for a short period into a dilute solution of hydrogen dioxide.—*P. C. D.*

***

Iron Development of the Positives on Paper.

In the *British Journal of Photography*, Mr. H. Colard advises the addition of potassium chloride in the ferrous oxalate developing solution to obtain sepia tones with positive proofs on gelatino-bromide paper; thus:

A.

Water	1000 c.c.	= 34 ounces
Oxalate of potassium	330 grammes	= 10⅜ ounces

B.

Water	1000 c.c.	= 34 ounces
Potassium chloride	130 grammes	= 4 ounces + 82 grains

C.

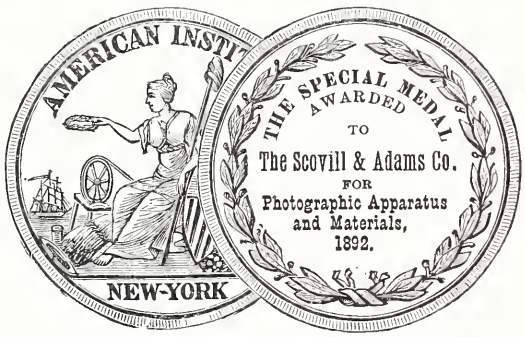
Water	300 c.c.	= 10⅝ ounces
Ferrous sulphate	24 grammes	= 6 drachms + 48 minims

Acetic acid.....	2 c.c.	= 34 minims
Potassium bromide..	2 grammes	= 30⅘ grains

For use: A, 20 parts; B, 5 parts; C, 5 parts. By increasing the proportion of B the sepia tone becomes darker.

A SILVER MEDAL.

THE SCOVILL & ADAMS COMPANY have received the Special Silver Medal which was awarded it at the sixty-first annual exhibition of The American



Institute, by the Board of Managers, for Photographic Apparatus and Materials. It is a special Medal, and was the highest award made by the judges this year.

TONING WITH THE METALS OF THE PLATINUM GROUP.

(*Continued from page* 57.)

A.—TONING WITH THE CHLOROPLATINITES.

General Rule.—The platinum toning baths must be acid and prepared with a salt at the minimum.

I. The simple platinous salts, chloride, sulphate, azotate, etc., being insoluble and very unstable cannot be employed in the composition of a toning bath.

The platinous azotite, incolorous, gives no result with weak acids, the strong acids decompose it.

The platinous sulphite, also incolorous, is in the same case.

The hyposulphite, of an intense red, is not useful. The other simple platinum salts at the minimum are little known or have not been obtained.

II. The photochlorides of platinum form with alkaline chlorides well defined, stable and soluble compounds, the chloroplatinites. One of them, the potassic chloroplatinite, now manufactured in great quantities for the preparation of sensitive platinum paper, answers perfectly for compounding the toning baths. The chloroplatinites of sodium, of barium, or of ammonium could be employed, but they are not easily found in the market and besides the latter is reduced by the action of light with great facility.* Hence in this study we will only speak of the potassium chloroplatinite.

III. We have seen that the presence of an acid is necessary in order that the toning action proceeds regularly and with facility, and that this acid should act first by partially decomposing the platinous double salt and diminishing its stability in presence of metallic silver; a neutral or alkaline solution of chloroplatinite acts very slowly, if at all. Besides by varying the *nature* and, within certain limits, the *proportion* of the acid added to the bath, the tints obtained with the proofs printing *on the same sensitive paper*, pass by the same phases, and are very nearly identical whatever be the period (variable with the composition of the bath) which is necessary to obtain them.

The mineral and the organic acids have absolutely the same action, provided, however, that one does not employ the former in such a proportion as they act on the silver, this proportion should not exceed 2 per cent. of the solution. Moreover from 5 to 10 grammes by litre (1 to 3 drachms for 35 ounces) of a mineral acid or of an organic acid, generally produce an action sufficiently energetic and rapid.

A very good toning bath is the following:

Potassium chloroplatinite...	1 to 2 =	15 to 31 grains
Phosphoric acid, pure.....	5 =	77 grains
Distilled water.....	1000 =	35 ounces

This bath can be used immediately and it keeps very well, specially in the dark. One may replace phosphoric acid by an equal quantity of sulphuric acid, or even employ nitric or hydrochloric acid. But these sometimes contain nitrous fumes or some chlorine which might peroxidize the platinous salt. *Besides, hydrochloric acid—as also all the chlorides—impede the toning action* while it is employed in too great a proportion. The activity of the bath decreases when the proportion exceeds 3 or 4 grammes by litre (46 to 62 grains for 35 ounces).

Boric acid produces a slow toning bath. It is not advantageous.

IV. *The organic acids* can be utilized as the mineral acids. However, we must make a choice among them.

In fact, if we replace, in the above formula, phosphoric by tartaric or acetic acid, the results will at first be exactly semblable. But if we wait a few days before using the solutions, we will constate, especially if they are exposed to light, that the toning action of the bath prepared with acetic acid

*This salt-ammonium chloroplatine would therefore advantageously replace the potassium salt in the preparation of the platinum printing paper.—*P. C. D.*

decreases much less rapidly than the action of the bath containing tartaric acid. The latter kept in the dark is even altered more rapidly than the acetic bath kept in a diffused light.

All the acids which possess a well-defined reductive power, the acids, formic, oxalic, citric, malic, etc , produce more or less the effect of tartaric acid, and must be prescribed from our toning-bath formulas.

If we desire to employ an organic acid, we will therefore select it among those which do not possess a reductive action on metallic salts, such, for example, as the acids, acetic, succinic, lactic, etc. I prefer the latter which is not volatile, and which can be easily procured.

The following formula gives an excellent toning bath, very rapid, very stable and not in the least altering the most delicate proofs :

Potassium chloroplatinite	1 to 2
Lactic acid	10
Water	1000

V. It is not absolutely necessary to employ an acid to impart to the chloroplatinite the property of toning the proofs printed by means of the silver salts. *The acid salts*, bisulphates, biphosphates, bisuccinates, etc., possess necessarily the same property; thus the following bath possesses the same action as the lactic bath:

Potassium chloroplatinite	1 to 2
Sodium biphosphate	10
Water	1000

The alkaline bisulphates or biphosphates, employed together with a proper organic salt, give, as the sulphuric and phosphoric acids, excellent toning baths, exactly as if these baths were acidified with the acids of these salts; thus the solution following acts in the same manner as one prepared with lactic acid:

Potassium chloroplatinite	1
Sodium lactate	10
Sodium bisulphate	10
Water	1000

But for the reason which led us to discard the reductive organic acids, we must reject the salts derived from them. The tartrates, the formiates, the oxalates, etc., will only produce baths which do not keep. The addition of a formate to one of the above solutions produces a solution which is completely altered in a few hours; besides, if one immerse a proof into it, it very often occurs that the image becomes entirely covered with a thick deposit of reduced platinum.

P. C. Duchochois.

(*To be continued.*)

THEORIES ON DEVELOPMENT.

The following paper, bearing the title "Some Thoughts Suggested by Dr. Mitchell's Lecture on Chemical Development," was read by John H. Janeway, M.D., U. S. Army, at the stated meeting of the Photographic Society of Philadelphia, on January 11, 1893 :

Mr. President and Gentlemen : I listened with much pleasure and great interest to the lecture of Dr. Mitchell, delivered at the last meeting of this Society, and was especially gratified to find that some opinions of mine, held for some time, regarding development were supported by such an able and eloquent advocate. I refer principally to the building down or etching of the film of the dry plate in contradistinction to the building up in the wet plate, by the application of the alkaline developer, which, to my mind, accounts partly for some of the mishaps that frequently occur to all of us. But I think it hardly fair that the Doctor should so summarily have dismissed the photo-physical part of development ; especially so in view of the lately very striking discoveries made in regard to light. I refer to its production of sound. It was found, so the report states, that when a beam of sunlight was thrown through a lens on a glass vessel containing lampblack, colored silks, worsteds, and other substances, this beam of light being cut up by a revolving disk so arranged with slits as to make alternate flashes of light and shadow, sound was heard, the ear being placed close to the glass vessel, as long as the flashing beam was falling on the vessel. By continued experiments a more wonderful result was obtained. A prism being interposed between the disk and the lens it was found that sounds were given with different intensity by different parts of the spectrum, and at times no sound was heard in other parts of the same. The report goes on to say that when the red played on the green, or green upon the red, the sounds were the most intense of all, but when blue was used there was little or no sound given off. The published account of these experiments in the *Art Journal* are not as full or well arranged as one would wish, and we will anxiously await further developments. But from these experiments, if correct, it will be necessary to give to light other powers than has been conceded to it, and will considerably modify, if not change entirely, the theories of the formation of the latent image as now held. It is well known that in regard to the formation of the latent image and its subsequent development that there have been three classes of investigators and defend-

ers. Two of these classes holding very wildly different views on the subject. The photo-physical, who claim that the action of light by its dynamic force so arranges or disarranges, as the case may be, and so made less stable, the molecules of silver held in the gelatine film as to enable the developer to bring forth and render visible the image unseen until action has taken place.

The photo-chemical, who claim that it is a tolerably certain fact that under the action of light the haloid of silver, the bromides, chlorides, and iodides have a tendency more or less powerful to return to the metallic state, which tendency is promoted and made permanent by the action of developers which are always reducing agents; that is, they are substances which are able to reduce the soluble salts of silver to the metal state. But will either of these two theories account satisfactorily for all the changes that take place from the time of exposure to the fully developed plate?

The third class are in favor of a combination of the two classes, or claim a mechanical and chemical combination, as set forth thus: The dynamic action of the wave of light, setting free the invisible particles of silver in the granules which form the emulsion on the plate, and these nuclei of metal acting as centres upon which the chemical action may take effect and proceed to the end. We know that some agents have the power of starting an action, and that others, though not able to start the act, have the power of continuing it and completing it. Another theory is that the development of a negative may be effected in one or two ways. 1st. The new compound may possess an attractive force. The action of light on sensitive compounds of silver tends to cause the formation of a substance capable of attracting the metal of which it is a salt when slowly deposited from a solution. This first deposit is capable of attracting more of the metal, and in this way an image is gradually built up. This is the theory of the physical development of the wet collodion plate. If the theory of the dynamic power of light can be proved, it can also be used as a theory for the development of the dry plate. 2d. The image may be the result of the reduction, more or less complete, to a more elementary state of the altered compound when treated with certain solutions, in which state it may have the same attractive power as before. This is the *rationale* of all alkaline development.

But to return to the discoveries previously mentioned, and subsequent ones following rapidly, as they will. If correct, they will of necessity displace, to a great extent, if not entirely, the vagueness that now surrounds the words "actinic force," "dynamical" and "mechanical" powers of light—words that are too frequently used to conceal our ignorance or to impress upon the minds of others an erroneous estimate of our own wonderful knowledge. If a wave of light is capable of producing sound it must have ponderance, a power to disturb an equilibrium, to disrupt and to separate, in fact, a dynamic power in many ways. By dynamic power we mean the power inherent in light to strike, to move, arrange, separate, congregate, disrupt, build up, or destroy any of the elementary substances, and in many cases their compounds upon which it acts.

The very disturbances which these waves of light are subject to in passing from and through different media must of necessity cause the generation of an immense amount of energy, and when we call to mind the immense velocity of these waves of light and their uncountable number, we cannot as yet estimate the force contained in a single ray, or the power it exercises upon any sensitive substance it impinges on. It has been repeatedly denied that light produces any separation of the elements in the formation of the invisible image, such as occurs when a visible image is formed by its action. But where is the proof for this assertion? I have as yet been unable to find it, though I have sought for it diligently, and am forced to believe it to be the *dictum* of one, repeated by others, as true. The fact is, that, surrounded by light, we have all the time been wandering in darkness. Cannot the occurence of halation or solarization be explained if we give due credit to the dynamic power of light, as defined? By halation we mean not only the havoc it plays on a window in an interior, but also with a landscape, the foliage becoming blurred, losing its true tone value and thus becoming both inartistic and unscientific. We have been taught that the reflection of light from the outside or back of the glass or transparent support is the cause, and to prevent it we must back the plate with some opaque substance in optical contact. This explanation and teaching is true, as far as it goes, with our rapid plates and films. But why do these returning rays exercise this power and produce this effect if they have not hammering force, so to speak, upon the already disturbed molecules of silver in the film. A plate has recently been introduced in England, called the Thomas Sandell plate, that is said to be entirely free from a chance of this mishap. It is coated by two or three emulsions of different sensitiveness, and to my mind this tells the story. The first coat is decidedly less sensitive

than the others; in other words, the light power is used up by the time it reaches the glass, and there is no reflection.

The objections raised against those plates, in the main, consisted of the extreme length of the exposure, said to be necessary, but even here "the doctors disagreed." Wuestner, of Jersey City, has very much improved the Sandell plate. His first substratum was a slow orthochromatic, and upon that spread one or two emulsions of high and highest sensitiveness; working upon the premises, that halation occurred less with dyed than plain plates. Since then he has also prepared another brand, simply with plain bromide of silver emulsions of different degrees of sensitiveness. It is said that either of these plates work rapidly and can be safely used for instantaneous exposures, and that halation has been reduced to nil. The reversal of the image is evidently caused by the same action of light as in halation, but that action has ceased before halation is produced.

Fog.—The veiling and the ultimate production of fog can be accounted for, if we agree that the dynamic action of light causes the molecules of silver to be so arranged and freed from their environment in the gelatine film, so that the latent image is formed and by development made visible. All goes well if there are plenty of molecules of silver for the developer to act on. But let the film be weak in especially the iodide of silver, we find at a certain point the developer stops its work. An additional quantity of the alkali is added, the work begins again, then stops. More alkali is added to force the developer. Suddenly a veil appears, followed quickly by a fog that destroys our work. You may ask me for my explanation of this destruction. The plates most subject to fog are those known as "rapid." The film is thin and very delicate. Bromide of silver is in excess, the iodide much less than normal. Whilst the light was so arranging the molecules of silver to form the latent image it doubtless disarranged and partly separated some adjacent molecules, not needed for the image, from their weak support. The development ceased because all the silver of the image was used up, or nearly so. More alkali, the accelerator, caused the using up of the remaining molecules. An additional dose of the alkali started the pyro or reducing agent in search for more material to work upon, against the adjacent only partly-protected molecules, and then—well—you all know what happens when a lighted match touches a pile of gun-cotton.

It has been with much trepidation that I have presented these, it may be, crude thoughts to you, when I remember that they have been addressed to many at whose feet I would gladly sit for instruction in the science and art which I believe we all love. But, having passed the Rubicon, I crave your kind indulgence for the thoughts advanced, though they may be at variance with your opinions.

TO PHOTOGRAPHERS.

The space assigned to the exhibit of photography occupies one of the courts on the second floor of the northern corridor of the great building for manufactures and liberal arts. The light is ample, coming from above, and all spaces will be equally advantageous in this respect. The pictures will be hung upon the walls of this court, or upon screens placed at right angles to the central aisle. The screens will be 16 feet long, and 11 feet high from the floor. The distance between screens is 10 feet.

No attempt at classification, separating portraits, landscapes, etc., will be made. Each exhibitor may present all his work in one group. No prizes, in the usual sense, are offered. The work will be examined by the agents of the Committee on Awards, whose reports will be substantially in the form that "A.B. is commended for excellence" in some respect named; not that "A.B. is awarded the first, etc., prize" for the first or second best pictures, or groups of pictures.

The hanging space, which will be simply board partitions, to which the pictures and decorations may be fastened, must be provided at the expense of the exhibitors. Each must present at an early day, and before a permit can be issued, a design of the exhibit which he proposes to make. All signs will be of a modest and uniform design, which will be furnished by the department. They will be placed at the top of the exhibiting space.

The exhibit will be restricted to photographs, or the printed product from plates derived therefrom by photographic process, as photogravures, half-tones, etc. Pictures derived from photographs by crayon, pastel, or any process not photographic, will not be admitted.

It appears to be an unnecessary hardship upon exhibitors to require them to wait for the verdict of a hanging committee, which could not pass upon the pictures until they should arrive. To avoid this it has been determined to allow accepted exhibitors to make their own selections, upon the assumption that, under the necessary limitations of space, they will have room to present only their best works. Applicants who are not known to the department will be asked to forward samples of their work to be passed upon before permits are granted. The Chief of the Department reserves the right to require any picture to be withdrawn.

Pictures must be received by the 10th of April and be in place by the 1st of May.

For farther information, address the Chief of the Department.

Selim H. Peabody,
Chief Department Liberal Arts.

In regard to the above communication "To Photographers," Mr. Peabody wrote to Mr. James

F. Ryder, of Cleveland, who had addressed a communication to him on the subject, as follows:

"You seem to have misunderstood the purport of the remarks about prizes. What I am intending to say, is that the State Fair fashion of giving a first prize, a second prize, a third prize, etc., will not be followed. I understand that the juries recognizing excellence in the work of an exhibitor, will so state in their report, and that the exhibitor will receive a diploma setting forth the fact, and also a medal.

"This explanation," writes Mr. Ryder, "seems to me directly at variance with the circular letter upon the subject of prizes."

Correspondence.

"BREAKING THE RECORD" AGAIN.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: In your issue of December 30th, you kindly furnish particulars regarding the remarkable instantaneous photograph "Breaking the Record" which appeared on page 609 of your last volume. With the information you have furnished, it seems still more surprising that a photograph could be taken under the specified conditions and yet retain such sharpness that the eye, even when aided by a magnifying glass, fails to detect the slightest distortion.

Let me state the conditions and the conclusions to which their consideration must lead. Speed of moving object, a mile in two minutes, equal to 44 feet per second; direction, nearly at right angles with the axis of the lens; duration of exposure, 1/900 of a second, but as the course of the bicycle was not quite rectangular I will take 1/1000 of a second as representing this factor. The height of the bicycle and rider would not exceed 72 inches, while in the picture their height, found by measurement, is 2.125 inches. Focal length of lens, 11 inches.

From these data, a simple calculation will show the amount of displacement which must be present in the negative.

The ratio between the size of the object and that of the image on the ground-glass is found by dividing the height of the former by that of the latter; thus, 72 divided by 2.125, equals 33.9 : 44 feet equal 528 inches; dividing this by 33.9, the quotient, 15.5 inches gives the displacement which would occur in one second of time. In 1/1000 of a second this blur would be .0155, equal to 1/64 of an inch.

What amount of displacement can exist in a picture which still gives to the eye the impression or sharpness? This point, perhaps, has not been settled, but according to high German authorities* the standard of excellence for instantaneous work, is a blur not exceeding 1/250, while the *greatest permissible* blur is placed at 1/125 of an inch. According to the same authorities, to obtain a picture of the wheelman, under the given conditions, with the blur of 1/125 of an inch, it would be necessary to place the camera at a distance from the object expressed by sixty times the focal length of the lens, while the size of the image on the ground-glass would be but 1.22 inches.

I would be glad to have an editorial opinion on this subject, as I am unable to understand how *practice* can be so greatly at variance with the indications of theory, and the teachings of experts.

Very truly yours,

Amateur.

We have referred this matter to the. Rev. G. M. Searle, Professor in the College of St. Thomas Acquinas, of the Catholic University of America at Washington, D. C.. as he is especially interested in such subjects, and is eminently fitted to explain them to the lay reader.

Professor Searle offers to give the formulas of the calculus to "Amateur," if he (or she) desires them.—Editor, THE PHOTOGRAPHIC TIMES.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: With regard to the matter of "Breaking the Record," it may be remarked that the figures of "Amateur" are quite accurate. But there are two quantities coming in, which after all, it is probable, are not, and can hardly be known with perfect accuracy, namely, the duration of exposure and the amount of blur consistent with apparent sharpness.

Mr. Hemment says the exposure was, as near as he can judge, 1/900 of a second; but has he timed this by any electrical or other accurate process? May it not really have been only half that?

Secondly, the German figures given by "Amateur" are no doubt good; but here too we have a matter of estimate. Some persons may be able to see a blur where others would not. The picture as reproduced does not, so far as I can see, show the spokes of the bicycle, which would seem to argue some blur; however, it would seem that they should have been visible in the original negative, at least on the bottom, where they are for the moment stationary.

But it may also be remarked that something depends on the form of the shutter. If full illumination is given in the middle of the exposure, the latter being counted from the moment when the lens begins to be opened to that when it is entirely closed, it is evident that the impression in the first and last parts of the exposure may be so faint compared with that given in the middle that it may be almost neglected.

With a simple object glass like that of a telescope, if a shutter be passed before it having a square hole just circumscribing the glass, the integral calculus will show us that the total illumination received during the first and last quarters of the exposure is only about 21/100 of that received during the whole exposure, the remaining 79/100 being received in the central half of the exposure. The impressions made in each of these two quarters, being only of about 1/8 of the brilliancy of that made in the central half, might then be unnoticed, and thus practically reduce the exposure to one-half of its apparent value.

G. M. Searle.

* See "Die Praxis der Moment-Photographie." David und Scolik, page 181 *et seq*,

PHOTO-ENGRAVING.

C. D. H., "an Operator," writes us that he is trying to engage in the photo-engraving business, but not being a veteran in the wet-plate process, he finds it very difficult to make proper negatives.

"I am troubled with pin-holes by the millions, and scum too," he writes, "but dry plates dry too slow, and in consequence, I wish to make dry collodion plate; in fact, I have already tried the formula given by you in July 1st Number of THE PHOTOGRAPHIC TIMES, on page 338."

To all appearances, my emulson is all right, it coats evenly and without any spots, looked at by transmitted light, but I find it impossible to develop any sign of a picture upon a plate coated with it.

"My question now is, can you advise me in any way, how to overcome these difficulties? Do you consider the formula a good one and is it suited to my kind of work? Can I use aristotype gun-cotton instead of proxyline, and what time should be given to a plate of this kind with a 6½ x 8½ Euryscope IV, 3 largest stop of 1⅝ inches diameter, strong light but without sunshine?"

In replying to our friend "an Operator" we must candidly tell him that to engage in the photo-engraving business without more experience than he has had with wet plates, is to undertake a work for which he is very poorly fitted. In the first place, the collodion emulsion is not the thing for line work. It may do for half-tone plates when absolute intensity is not required, but when we undertake the photo-engraving business, we must adopt at once the wet-collodion process.

You do not seem to have any confidence in the gelatine emulsion plate, but we advise you to try an emulsion plate of moderate sensitiveness, like the Carbutt process plate, expose properly, that is, for the whites only, and develop with para-amidophenol, or with diamidophenol (amidol) and apply restrainer liberally.

The collodion formulas (page 338 of THE PHOTOGRAPHIC TIMES) will not give good results for your purposes. Rutherford's formula for wet plates and Canon Beachey's emulsion are objectionable on account of the Cadmium haloids contained therein, and of the other formula desired, intensity can hardly be expected.

You do not say how your plates were developed, but say after (in your opinion) sufficient exposure not a sign of the image made its appearance, we infer that you have used an acid developer, probably that with ferrous sulphate. That was wrong. Collodion emulsion must be developed with alkaline solution, the same as gelatine emulsion, and to keep the non-exposed parts of the plate clear, bromide restrainer should not be spared Beer, as a preservative agent, has been employed principally by the English, and they have also used ale in all probability.

We recommend to use P. Pary's gun-cotton.

The time of exposure must be learned by experience. We cannot give any distinct rule. But with a Euroscope No. 6, and the third largest stop, probably *f*/15, you cannot make negatives fit for process work. The Euroscope, if we mistake not, has five stops; use the smallest, probably *f*/16. Process plates must be absolutely sharp. Sharpness in the sense of the ordinary photographer is not sufficient to etch lines and stipple clean, distinct and precise.

We have objected above to the Cadmium haloids, because we firmly believe these salts tend to thicken the collodion, and make ragged lines. We prefer in the wet-collodion process ammonium iodide and bromide.

If our correspondent will look at pages 270, 271, and 272 of "The American Annual of Photography for 1893," he will find some very valuable hints for successful working with wet-collodion plates.—EDITOR, THE PHOTOGRAPHIC TIMES.

Notes and News.

"The Christmas Number of THE PHOTOGRAPHIC TIMES is a very fine number indeed," writes ROY E. MUVER, of Roxbury, Mass.

"The members of this club (Portland Camera Club) enjoy your magazine very much," writes Mr. F. S. Bullard, Secretary of the Club.

R. W. Harrison, formerly of Sioux City, Iowa, has bought out a gallery at Selma, Alabama, and is doing very well with his new venture. Mr. Harrison writes that Selma is a good town of 20,000 inhabitants, and the gallery which he has purchased is a well arranged one. We wish him all success.

Alcohol and Potassium Chlorate should be mixed with caution. Schneider in the *Pharm. Cent.*, says that if a few crystals potassium chlorate, moistened with alcohol, be rubbed in a motar, a number of little explosions will follow, making a noise like the crack of a whip. If a crystal of the chlorate be wet with alcohol, placed on an anvil, and struck a sharp blow with a hammer, a violent detonation will take place.

Dana's New Photographic Studio at 101 Fifth Avenue., Pittsburgh, Pa., was opened January 31st, with an exhibition of aquarelles, pastels, water colors, porcelains, miniatures, ivoryette, photo portraits. The exhibition continued during the afternoons and evenings of February 1st, 2d, 3d, and 4th. Music by Guenther & Rothleder's orchestra every afternoon from three until five, and evenings from eight until ten.

This is enterprise which should be rewarded by liberal patronage, as it undoubtedly will be.

A Bibliographic Supplement.—The attention of our readers this week is called to the Bibliographical Supplement, which contains not only considerable information of interest in regard to the literature of photography, but also many advertisements of interest to those who are collecting photographic books, or desire to dispose of them.

This Supplement will probably be published at intervals of about once a month. Advertisements from our subscribers who desire to obtain special numbers of the magazine to complete their files will be inserted without charge.

The Function of Portraits.—No reader of Tennyson's poetry can have his soul vexed by grotesque representations of the poet's lineaments such as the caricature of Mr. Swinburne that appears in the memoirs of the late W. B. Scott, where one of the finest brows ever seen is made flat and receding after a type that is more Aztec than European—where the under lip is almost negroid, and where the enormous eyes are out of all proportion to any face pretending to be human. One or two bad portraits of Tennyson there are, no doubt, but there is in most of them some kind of merit. Still, the poetical student in future times will remember me and thank me for having enabled him to form a true mental image of our dead master in the art of poetry, as I now thank Hoccleve for enabling me to form a true mental image of his master, Chaucer. The older one grows the more trivial and worthless seem the valuable possessions of this world. Not only does the land-hunger that destroyed Sir Walter Scott seem amazing and incredible, but even the more legitimate yearnings of the artistic temperament lose much of their power until, at last, there seems to be nothing left to charm us save the loveliness of nature alone. The beautiful things we once sought so eagerly—the carved furniture, the Indian ivories, the choice bindings, in some degree the pictures, nay, even the rare books (unless, indeed, they be printed by Morris's own hand at the very Kelmscott Press itself, when they are joys forever)—everything fades in charm, until at last we pass in and out of the room without heeding anything. But the portrait of the poet we love, after we have once satisfied ourselves of its authenticity, is the source of never-ending comfort and delight; the eyes on the canvas seem charged with his own beautiful thoughts, the lips seem to be murmuring his own beautiful words.—THEODORE WATTS, in the *Magazine of Art for February.*

Professor Edward C. Pickering, the Director of the Harvard Astronomical Observatory, has just issued the forty-seventh annual report of that institution. The report touches upon a number of matters interesting to the general public. After discussing the observations taken with the east and west equatorials, the meridian circle, and the meridian photometer, Professor Pickering takes up the subject of photographs. The number taken in Cambridge was 2,777, and at the Harvard station in Peru, 2,000. By means of these photographs seven new variable stars have been discovered, and bright hydrogen lines in the spectra of many stars already known. Some of these photographic plates have been sent to other observatories for special investigation. Many photographs were taken of the lunar eclipse of November 15, 1891. The examination of the photographs for the detection of a possible lunar satellite led only to a negative result.

The Harvard station has been successfully established at Arequipa, Peru, where the effect of the air is no longer, as heretofore, the principal obstacle to progress in astronomy. At Arequipa the limit is now the size and excellence of the instruments. A great advance could be made in a knowledge of the planets and fixed stars if an instrument of the largest size could be mounted under such favorable conditions. At present, Professor W. H. Pickering, who is in charge of the station, employs chiefly a thirteen-inch telescope, an eight-inch Bache telescope, and a photographic camera with an aperture of two and a half inches. Many interesting results have been obtained from observations of the moon and the various planets. Schiaparelli's view that the rotation of Mercury on its axis occupies the same time as its revolution in its orbit has been confirmed; evidence has also been obtained tending to show that Mercury has no atmosphere. On Mars more than forty minute black points were discovered provisionally designated as lakes; the presence of the dark and narrow streaks called canals by Schiaparelli has been confirmed, and various measurements of them made. The relative colors of different portions of the planet have been minutely observed; two large dark blue areas have been detected; and other portions have been noticed to be subjected to gradual changes of color. Meteorological observations have been carried on at the regular station, which is 8,060 feet above sea level, at Mollendo, 100 feet above the sea; La Joya, 4,150 feet, and Chacani Ravine, 16,650 feet.

The Bruce photographic telescope, which will in many ways be the most powerful instrument of the kind in the world, is rapidly approaching completion. Work has been begun on a one-story brick building, where it will be erected during its trial in Cambridge. After sufficient tests it will be sent to Arequipa.

During the year the library of the observatory has received 169 volumes and 964 pamphlets; the total is now 7,198 volumes and 8,745 pamphlets. The year has seen the erection of a fire-proof building, covering a space 30 feet by 60, for the storing of photographic plates and valuable manuscripts. For this structure a fund of $9,200 was given by friends of the observatory.

AMIDOL.

[Abstract from article in *Photographische Rundschau*, November, 1892.]

AMIDOL is a reducing agent similar to all others employed in the alkaline development. But it is of acid reaction and must not be combined with alkaline substances, else fog would invariably result. Properly speaking amidol should be arranged in the class of acid developers, like, for example, the ferrous oxalate, from which, however, it differs in every particular. Its developing or reducing force is enormous and surpasses that of any other substance heretofore employed for the same purpose.

The formula generally adopted by photographers is

Distilled water	1000
Cryst. sodium sulphite	50
Amidol	5

On application of this solution the image comes forth rapidly and vigorously. An increase of sulphite in the

solution enforces its action without despoiling half-tones or middle-tints. In its present form the solution is not very durable, and, on account of its enormous energy, not very controllable. Suitably diluted the solution is easier to handle, but even then it acts rapidly and with great force. Amidol solutions as described do not keep any better than rodinal, but on account of its great solubility, the substance offers rare advantages. Alkalis added to any of the usually employed reducing agents will attack the film to some extent, and promote frilling of the plate. With amidol that cannot possibly occur. Could we prepare of it highly concentrated solutions made durable by merely adding a preserving substance, amidol would positively be the best imaginable developer.

Means to attain to this end have indeed been found. Dr. Eder asserts the addition of acids to the developer retards its action, but all, or mostly all, acids are but little adapted to the purpose with the single exception of the sulphurous acid. If we prepare an amidol solution with metabisulphite of potassium, instead of with sulphite of sodium the developing force of the substance is almost totally annihilated, and the solution oxidizes but very slowly, but when adding potassium bicarbonate, neutral potassium sulphite is formed and the developing force restored. According to the quantity of potassium bicarbonate added we will have in the solution either potassium sulphite alone, or with it an excess of potassium metabisulphite, or an excess of potassium bicarbonate. The more perfect the neutralization of the solution, the more energetic will it be as a developer, but going beyond the state of neutrality, and allowing bicarbonate to be in excess one would suppose fog would result as strong alkalinity does with all other developers, but it does not, in reality the bicarbonate promotes clearness of the plate and intensity.

When the bicarbonate is added to the solution, carbonic acid is evolved under tumultuous effervescence, and only after its total cessation can the solution be applied to the plate. Carbonic acid still present would settle upon the film in form of tiny little bubbles and ruin the negative.*

To make the solution we give the following formula :

A.

Distilled water.	...100 c.c.	= 3½ ounces
Potassium metabi sulphite	25 gm.	= 495 grains
Amidol	5 gm	= 77 grains

B.

Distilled water.	...100 c.c.	= 3½ ounces
Potassium bicarbonate....	20 gm.	= 308 grains

To make developer of these stock solutions add to 100 c.c. of water, 10 c.c. of A solution and of B from 5 to 50 c.c. The energy of the developer is increased or decreased in proportion to the amount of B solution added, hence over-exposures require but a minimal amount of B, and under-exposures a maximum quantity of it.

Plates of unknown or uncertain exposures should be commenced with but little of B, and the amount be increased as exigencies may demand. When adding more of B solution the plate must be lifted from the bath as stated before.

Normal exposures need not more than 22 c.c. or 308 grains of B solution.

For bromide of silver prints the normal solution may be diluted with from 3 to 4 volumes of water.

To prove the durability of A solution a portion of it has been exposed to the influence of air for one week, then mixed with water and the required complement of B solution.

A bromide print developed with it as well as with a freshly made solution, and after standing for ten minutes, and on the addition of more B solution, the effect was still the same, if not better.

It is well known high temperature softens the gelatine film and induces to frilling. It is true certain tanning agents like chrome alum have proved to restore solidity to plates developed with the acid ferrous oxalate, but after all that has been said in favor of tanners, they are not applicable to plates developed with alkaline solutions.

With amidol, also of acid reaction, quite different observations have been made, and chlor-aluminium admixed to the developer has resulted highly satisfactory. The best method to proceed with this unique medium is to reduce the quantity of water of the original formula and substitute it by a 1 per cent. solution of chlor-aluminium. The solution turns slightly milky, which does no harm.

On account on the tanning action taking place at once, the process of developing is somewhat retarded without, however, injuring details or density of the negative.

When developed in this manner the negative may be blotted between bibulous paper and dried at a temperature an ordinary plate could not possibly stand. Chlor aluminium does not injure the beautiful tones produced upon bromide paper by amidol.

With bicarbonate as above described amidol permits almost unlimited latitude of exposure and development. It is indeed an enormously active and energetic reducing agent.

*The same as with hydroxylamine developer.—*Translator.*

Photographic Societies.

DEPARTMENT OF PHOTOGRAPHY OF THE BROOKLYN INSTITUTE.

On Monday evening, January 23d, at 502 Fulton Street, Professor Arthur H. Elliott, of the New York College of Pharmacy, gave a very interesting Lecture on "The Optics of the Photographic Camera, illustrated by the exhibition of several lenses.

Professor Elliott's lecture proved to be one of the most interesting and instructive lectures ever given before the Department.

By means of various lenses, and the Beach brand, he illustrated very plainly the manner in which parallel rays of light are refracted or bent in passing through mediums having different indexes of refraction, also spherical and chromatic abnation and the means employed to correct them, all of which is rather dry reading, but became very interesting as explained by Professor Elliott.

At the close of the evening Mr. Otis A. Porle, of Japan, exhibited a number of lantern pictures of street life in Japan, which proved of such interest that he was invited to repeat the exhibition in the Studio Rooms of the Department, 201 Montague Street, Thursday evening, Jan. 26th. The largest audience ever gathered in these rooms since they have been occupied by the Department greeted Mr. Porle, and listened to his very interesting comments on the many beautiful pictures as they appeared on the scene.

Mr. Porle is a very enthusiastic as well as successful amateur, and has succeeded in catching bits of street life in Japan, which are of great interest and rarely seen in America, and are in striking contrast to the endless view of temples and budhas so often shown.

The Editorial Table.

Picture-Making in the Studio, by H. P. Robinson. New York: The Scovill & Adams Company.

A readable and instructive book which every professional photographer especially will find of the greatest value.

"Picture-Making in the Studio" completes a series of books by H. P. Robinson, he having given photographers heretofore valuable works on "Pictorial Effects in Photography," "Picture-Making by Photography," "Letters on Landscape Photography," and "The Studio, and What to Do in It." "Picture-Making by Photography" was devoted to out-of-door pictures and groups, "The Studio, and What to Do in It" appertains more to the construction and management of the studio. "Letters on Landscape Photography" was exclusively devoted to out-of-door pictures, and "Pictorial Effect in Photography" is an important work, covering the entire subject. It therefore remained for this latest book on picture-making in the studio by photography to complete this important series of books.

The present volume contains, exclusive of an introductory chapter which is full of practical hints and suggestion, chapters on "How a Studio Picture was Conceived and Executed," "Portraits that are Pictures," "Printing," "The Business of Portrait Photography," and a supplementary chapter on "Individuality in Photography."

The book is embellished by an excellent half-tone reproduction from a negative by Mr. Ralph W. Robinson, a son of the author. This picture illustrates Chapter 3, entitled "Portraits that are Pictures."

The book is printed in large type on heavy book paper, uniform in size and style with the other numbers of the well-known Scovill Series, of which it constitutes the 42d issue. Its price in paper covers, is 50 cents; cloth-bound (Library edition), $1.00.

A. M. Collins Mfg. Co., have introduced some very handsome cabinet cards in agreeable brown tints, with enamelled face and gray back; also with plain edges, round corners, or pure gold serrated edges.

These cards can be furnished with letter-press or embossed imprint, but not with lithographic imprint. They fully maintain the established reputation of this well-known firm.

Vol. 3d of "The Practical Photographer" comes to us neatly bound in red cloth, with the compliments of the publishers. With its numerous illustrations and practical articles, it is a valuable acquisition to any photographic library.

AN ANTI-CLIMAX.

"He was found with a bullet hole in his temple, his right hand grasping a smoking revolver and the photograph of a woman lying beside him on the floor."

"Well?"

"Nothing, except that when I saw how homely she was I did'nt blame him, poor fellow!"

Queries and Answers.

22 GEO. W. H., W. Va.—Your combined toning and fixing formula given in Sep. 2, 1892 number of PHOTO. TIMES needs a little explanation.

1. You say heat to 120 deg. Do you mean 120 deg. Fahr.?
2. What is the object of heat?
3. Can it be too strongly heated, and why?
4. Should the prints tone in less than fifteen minutes?
5. How would you retard toning action? I do not like to dilute with H_2O, for that weakens fixing also.
6. Kindly advise me if you have had any complaint from use of this formula on account of fading, etc.

22 *Answer.*—1. We adopt the Fahrenheit thermometer because all Americans do so.

2. The object of heating is to expell sulphurous acid from the solution as much as possible.

3. Excessive heating would involve evaporation, and make the solution stronger.

4. Prints tone with us in from fifteen to twenty minutes.

5. By adding plain hypo solution to the bath.

6. Not to our recollection. Additional questions on this or other photographic subjects will always be cheerfully answered.

23 A. L. K.—1. Can you answer roughly the following: How much sulphite of soda by weight must be dissolved in an ounce of water to make the solution test 30?

2. How much sal soda must be dissolved in an ounce of water to make the solution test 15?

Crystals of both are supposed to be used, and the test made with the form of hydrometer used to test the strength of silver solutions.

23 *Answer.*—1. 48¾ grains.

2. 30⅝ grains. Temperature of water of 65 deg. F.

24 C. E. F., Nevada.—Please give formula for the use of the Pile test tube?

24 *Answer.*—

Water	1 pint or 7291 grains
Dried chloride of sodium	140 dr.
Potassium bichromate	2 grains

25 YOUNG.—Please tell me the meaning of acid 20-grain silver bath in this formula:

Boiling water	80 ounces
Chloride ammonia	100 grains
Iceland moss	60 grains

When nearly cold, filter, and immerse the silk for fifteen minutes: sensitize for fifteen minutes in an *acid 20-grain silver bath*, and when dry stretch over cardboard.

25 *Answer.*—Solution of nitrate of silver 20 grains to the ounce of water. Add a few drops diluted nitric acid till blue litmus paper turns red after being immersed for a few seconds.

BIBLIOGRAPHIC SUPPLEMENT

TO THE

Photographic Times.

CONDUCTED BY C. W. CANFIELD.

FEBRUARY, 1893.

INTRODUCTORY.

IN view of the interest at present manifesting itself in the subject of photographic literature generally, the publishers of THE TIMES have undertaken to publish occasional supplements treating exclusively on photo-bibliography. It is proposed to treat the matter broadly, and to awaken interest in the theme by all possible means.

It is a fact which has often been commented upon in the past, and which still remains true, that there is nowhere in the world a complete library of photographic literature.

Isolated collections exist, and it is part of the plan to publish such lists of these as are extant; thus enabling the investigator to locate the works which he needs to consult. This feature will be begun by the printing of the list of volumes in THE PHOTOGRAPHIC TIMES Library.

It has also seemed desirable to republish in corrected form the articles below which appeared in THE TIMES during 1887, with such additional information as I have since been able to obtain.

AMERICAN BIBLIOGRAPHY OF PHOTOGRAPHY.

CLASS A—PHOTOGRAPHIC JOURNALS.

(Acknowledgment is due to friends for favors received in consulting their files of the early journals, especially Mr. O. G. Mason, of this city.)

THE OLDEST PHOTOGRAPHIC JOURNAL.

The Daguerrean Journal, devoted to the Daguerrean and Photogenic Arts; also embracing the Sciences, Arts, and Literature. S. D. Humphrey, Editor and Publisher, No. 311 Broadway, New York. Printed by William S. Door, 101 Nassau Street. Vol. 1., No. 1, November 1, 1850. 8 vo. Fortnightly. 32 pp.

To America belongs the distinction of having been the pioneer in issuing this, the forerunner of all the numerous throng of publications to-day issued in the interests of photography in this country and in Europe. In his review, at the close of the first year, the editor says, "We now find two journals dating their commencement in our wake—one with us in America, the other in France." The reference is to the *Photographic Art Journal*, and (I believe), *La Lumière*.[1]

The objects of the *Journal*, as set forth in the opening number, were "to present new processes or discoveries as they arose, to expose the vendors of swindling 'processes' and receipts, and generally be a means of uniting 'Daguerrean artists' in this country and elsewhere." Other matters were also to be touched on, indirectly connected with the principal subject, art and sculpture chiefly

In writing of the design on the cover, reference is made to a portrait of Daguerre in the possession of Meade Brothers, of New York. It would be interesting to know if this is still in existence.[2]

A peculiarity in nomenclature strikes one in reading some of the articles, that is the use of the word "camera" as applying to the *lens*; or perhaps more strictly speaking, to the lens and box combined, as the two formed one thing, apparently.

In a foot-note in the first number the editor says: "It is generally acknowledged that the Daguerrean art is more successfully practised in America than any other country. Most of the artists pursuing this art in France, England, and Germany consider it to their advantage in advertising to say, 'Daguerreotypes by the American process.'"

That the present "era of instantaneity" was anticipated will appear from the following: "The march of discovery proceeds at an amazing pace. Scarcely a week or a day elapses without bringing forth some new wonder of this kind, so extremely wonderful that all common terms of admiration become exhausted. The time is at hand when a portrait may be taken of an orator at his moment of greatest exaltation—of a great actor at the in-

1 This was begun February 9, 1851.

2 I have since answered my own question in the articles on "Portraits of Daguerre," in the "American Annual" for 1891 and 1893.

stant of his most passionate action. The engaging smile of a fair one can be consigned to a metallic immortality, mocking the short-lived recollection of him who says he will never forget it. The whole of the figures engaged in some public act can be depicted at once, exactly as they stand, speak, and look at the most critical moment."

An estimate is given placing the number of Daguerrean rooms in the City of New York devoted solely to the art in 1851 at 71, employing 127 operators, 11 ladies, and 46 boys. The amount of rent paid, $25,550; wages, calculated at $10 per week, for the 127 operators, and less for ladies and boys, makes a total of $71,292.

Cheap prices had then already begun to gnaw like a canker at the hearts of the truly devoted; but one cause of the success of "Cheap Johns" then, as now, was touched on in this sentence: "We may almost look in vain to see our art elevated to its deservedly high eminence until the public shall be enabled to discriminate between a fifty-cent and a three-dollar Daguerreotype. We look upon a person visiting a Daguerrean artist's rooms for the purpose of obtaining a *cheap* picture as one who thinks little of the art and less of his friends."

In the second number we see the familiar name of "Scovill Manufacturing Company" referred to as headquarters for Daguerreotype cases.

Mention is made in the third number of a prize of 5,000 francs offered in France for photographs in natural colors.

No. 7 contains the announcement, under the heading "New and Valuable Discovery," of the Hillotype, a process of producing impressions upon metallic plates with all the colors of nature. The importance of the process, provided its claims are proven, is dwelt upon at some length; but as it was one peculiarity of this process that, like the Keeley motor of our own day, it was always on the verge of completion, yet never became an accomplished fact, of course its success was never recorded. The literature of this period abounds in reference to Hill and Hillotype; and the whole matter is one of the singular chapters in the history of photography, but rather outside of our subject here.

In the May number Mr. Hill is announced as co-editor, which arrangement was terminated in the following September.

Of Vol. III. only three numbers were published, the last on December 15, 1851, after which date it was merged into *Humphrey's Journal*, the first number of which was issued April 15, 1852, as Vol. IV., No. 1.

That number contains an editorial article, stating that the D. J. had been disposed of and the list of subscribers passed into other hands.

"We expected and understood that a new journal, or, at least, the *Daguerrean Journal*, would be immediately brought out, and we thought greatly improved under the management of other and more experienced hands," etc.

In the May 1 number occurs the following notice:

"It will be seen by the present number that we have called this volume *four, second series.* This arises from the fact that in future *Humphrey's Journal* will appear as in continuation of the *Daguerrean Journal.* The latter publication was sold some time since, and the party authorizing the purchase have failed to carry out in full their agreement, which agreement was to pay the publisher of said journal a certain amount bonus, and also furnish the subscribers to the amount of their subscriptions, with a copy of the contemplated publication. For this purpose, a list of subscribers was transferred and forwarded to the party. It was understood that the *Daguerrean Journal*, or a new one, would immediately appear.

"From the fact of the non-appearance of the said journal in any shape, Mr. Humphrey, the responsible publisher, was under the necessity of rendering as far as lay in his power, full satisfaction to all of his old friends and subscribers, and, in order to do this, has been prompted to continue and to make the offer to refund where the change may not be satisfactory. * * * *

"We find it extensively circulated that the Scovill Manufacturing Company purchased the *Daguerrean Journal* for the purpose of benefiting their business. We must say that all such report is a *base falsehood;* the *D. J.* was to be transferred, as we understood, to an agent of a party residing in the city of Philadelphia.

IT IS SELDOM SAFE to accept the description of a volume, even a bound volume, of a photographic periodical as *complete*, without carefully collating it; there are usually numbers, or pages, or plates, missing, unless they come from a careful dealer or seller.

From the Publishers of the *Photo-American* we have received a handsomely bound copy of Vol. III. It makes an interesting book for the library, full of interesting reading matter and many bright and beautiful illustrations.

LIBRARY OF THE PHOTOGRAPHIC TIMES.

Bound Journals.

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The Amateur Photographer, London, Vols. III. IV., V., VI., VII., VIII., IX., X., XI., XII., XIII., XIV.

St. Louis Practical Photographer, Vols. I., II., III., IV., V., VI., VII., VIII., IX.

Philadelphia Photographer, Vols. I., (1864), II. III., IV., V., VI., VII., VIII., IX., X., XI., XII., XIII., XIV., XV., XVI., XVII,, XVIII., XIX., XX., XXI., XXII., XXIII., XXIV., XXV., XXVI., XXVII.

Photographic News, London, Vols. I. (No. 1, September 10, 1858), II., III., IV., V., VI., VII., VIII., IX., X., XI., XII., XIII., XIV., XV., XVI., XVII., XVIII., XX., XXI., XXII., XXIII., XXIV., XXVI., XXVII., XXVIII., XXIX., XXX., XXXI., XXXII., XXXIII., XXXIV., XXXV

British Journal of Photography, Liverpool, Vols. VIII. (1861), IX., XI., XII., XIII., XIV., XV., XVI., XVII., XVIII., XIX., XX., XXI., XXII., XXIII., XXIV., XXV., XXVI., XXVII., XXVIII., XXIX., XXX., XXXI., XXXII., XXXIII., XXXIV., XXXV., XXXVI., XXXVII., XXXVIII.

The Camera, London, Vols. II. (January 1, 1888), III., IV., V.

Photographic Globe, New York, Vol. I. (No. 1, March 1890). All published.

Science of Photography, Philadelphia, Vol. I. (April–December, 1888), Vol. II., Nos. 1, 2, 3. All published.

The Photographic World, Bradford, England, Vol. II., No. 22, Jan. 16, 1888, to December 15, 1889 (last published).

Photographic Art Journal, London, Vols. II., III.

The Photographic Beacon, Chicago, Vol. I., 1886. (Nos. 1 and 2 wanting.)

The Beacon, Chicago, 1889, Vol. I.

Journal of the Society of Amateur Photographers, New York, Vol. VII., 1890.

American Journal of Photography, Philadelphia, Vols. VIII. (1887), IX., X., XI.

American Amateur Photographer, Brunswick, Me. Vol. II. (1890.)

Photographic Herald and Sportsman, 1890. Lacks Nos. 1 and 2. Has Nos. 13 and 14, Vol. II., bound in.

The Practical Photographer, Bradford, England. Vol. I., 1890

Photographic Art Journal, New York, 1851, Vols. I., II., III., IV., V.

The International Annual, New York, Vols. I., II., III., IV., V.

British Journal Almanac, Vols. 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1880, 1883, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893.

Photography, London, Vols. I. (November, 1888, to December, 1889), II., III.

Walzl's Monthly, Baltimore, Md., Vol. I. (No. 1, January, 1884.)

The Value of Photographic Books is a very difficult matter to determine. In one sense they may be said to have no value, in another sense, they may be worth fancy prices. An aution sale is usually deemed a tolerably severe test, and some of the prices obtained at such a sale in London, March 4, 1887, may be of interest:

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WITH the beginning of a new year, our publishers invariably receive a large number of requests for back numbers of THE PHOTOGRAPHIC TIMES, which have been mislaid or lost during the year, and thus render the volume incomplete for binding. Many times the stock of the earlier numbers of the year are exhausted long before the volume is completed, so that it is impossible for our publishers to comply with these requests. For instance: all the numbers of January and most of the February numbers of 1892 are out of print so that those of our readers who have not preserved those numbers will be unable to complete their files for binding, unless they are enabled to obtain them in response to advertisements.

Our publishers very generously offer to advertise for such missing numbers for their subscribers without charge in order to facilitate the completing of such broken volumes. They have also ordered a number of handy binders for preserving the magazines during the year, and thus avoid such losses in future. This binder is fully described in the advertisement on the second page of cover, so that it is unnecessary to dwell upon it here. Suffice it to say that by the handy contrivance, loose copies of THE PHOTOGRAPHIC TIMES may be readily placed in it from week to week, as they are received from the publishers, and by means of the solid wooden back, the binder presents nearly as neat an appearance, when only partly filled, as when the volume is completed. Each binder holds the magazines for six months, and can be used repeatedly, so that one binder is all a subscriber really needs, though two, holding the magazine for the entire year, is a convenience, as it makes unnecessary the removal of the periodicals when the six months is completed. They may be used as permanent binders for the magazine, if desired, though the publishers offer to exchange bound volumes of THE PHOTOGRAPHIC TIMES for loose copies when in good condition, charging merely the cost of binding, which is $1 when they are bound in one volume without advertisements; $2 when bound in two volumes with the advertisements.

THE PHOTOGRAPHIC TIMES, with its fifty-two artistic frontispieces and numerous other full-page pictures, and its wealth of practical information by the leading experts in the two hemispheres, when supplied with a good index, is certainly worthy of preservation in this permanent form. It makes a standard book of reference, good for all times, and we are glad to note that so it is being considered by a greater number of photographers every year.

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We direct the interested reader to the advertisement, also on the front cover, which treats of this matter more fully.—*Reprinted from* THE PHOTOGRAPHIC TIMES *of January* 20, 1893.

MONOTONOUS.

Visitor: Anything new in photographs?"

Photographer (wearily): No, the same old faces!

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REVIEWS.

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In this work the theory as well as the practice of photography has been clearly and thoroughly treated. The opening chapters are devoted to chemical definitions and manipulations which tend to give the reader a clearer insight into that which follows. The arrangement of the work is admirable, and shows the result of much care expended in this direction by no means the least important in the art of book making. It is an 8vo. of 400 pages, well filled, well printed, and tastefully bound.—*Anthony's Photographic Bulletin.*

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WANTED.—THE PHOTOGRAPHIC TIMES of September 4, 1891, (No. 520). HERBERT F. SMITH, Secretary Syracuse Camera Club. 322 South Salina Street, Syracuse, N. Y.

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"Studies in Artistic Printing." Hearn, Philadelphia. 1877. Cloth	1 25
"The Photographic Amateur." Taylor. Second edition. New York. 1883. Paper	40
"Modern Practice of Retouching." Piguepé, New York. 1886. Paper. (Second edition.)	40

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Its value as a text-book is much enhanced by the historical element so freely introduced; and as this is a hobby which the author has ridden long and successfully, it may be taken as fairly accurate.

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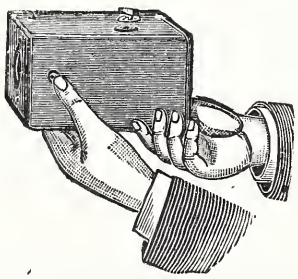
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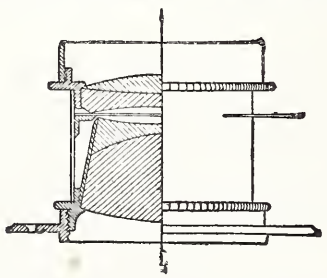
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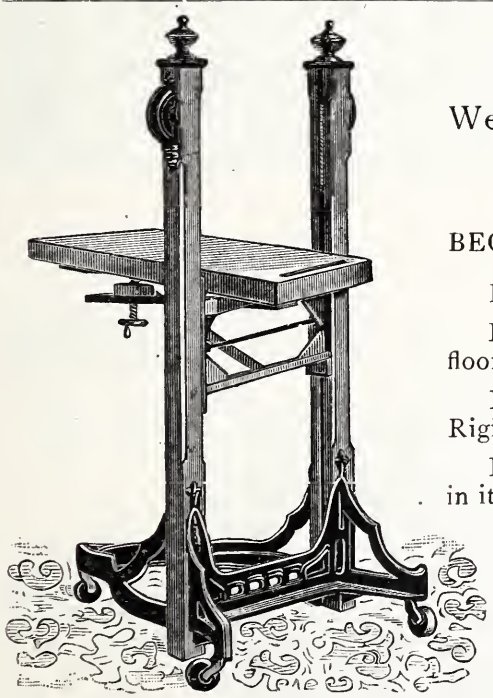
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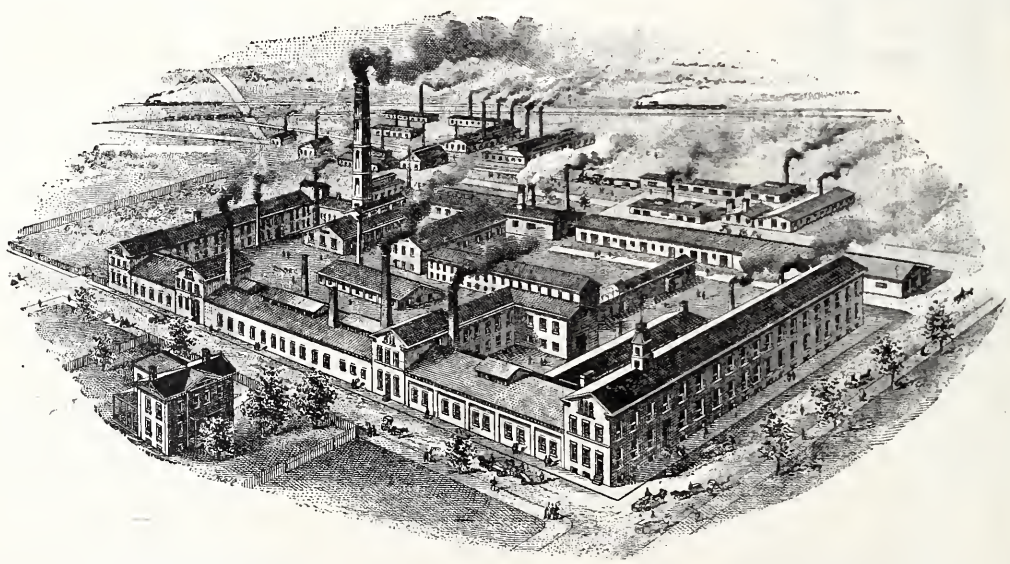
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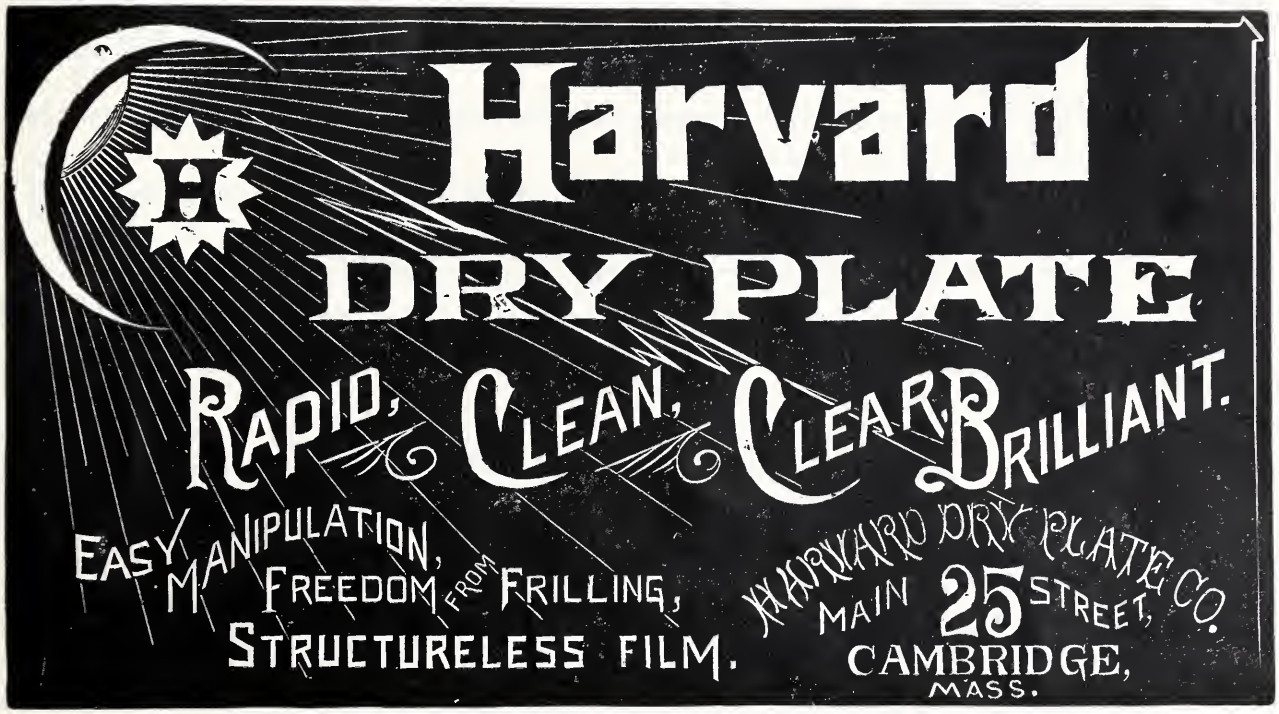
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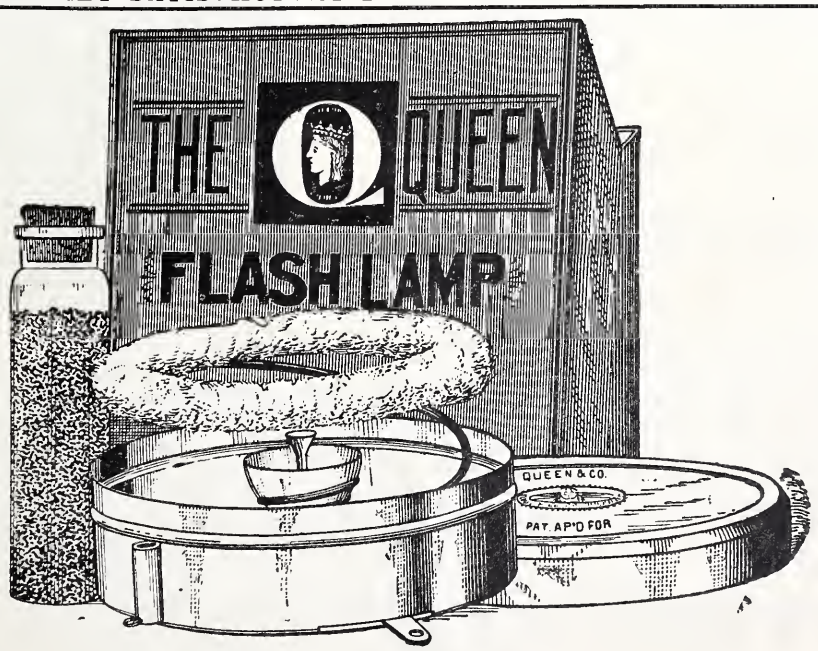
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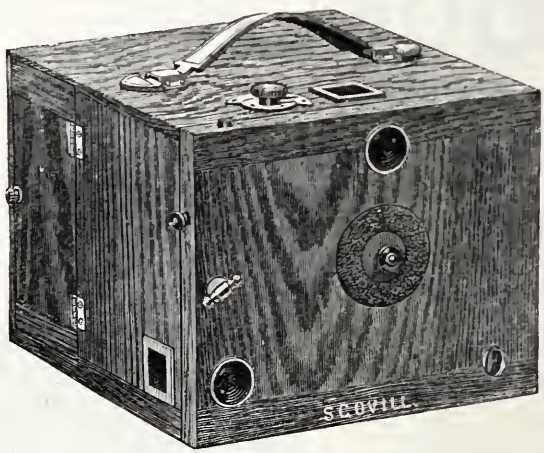
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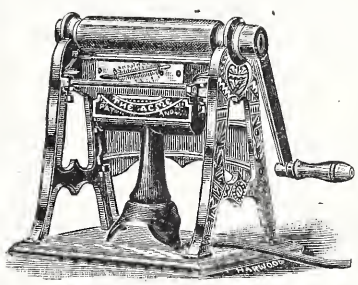
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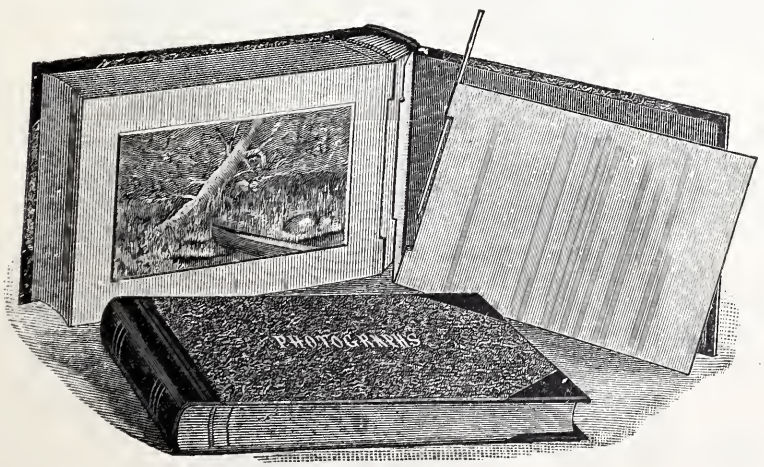
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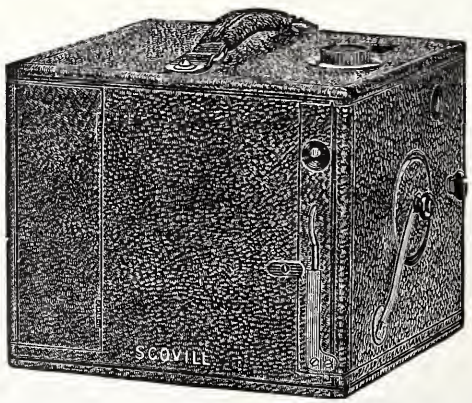
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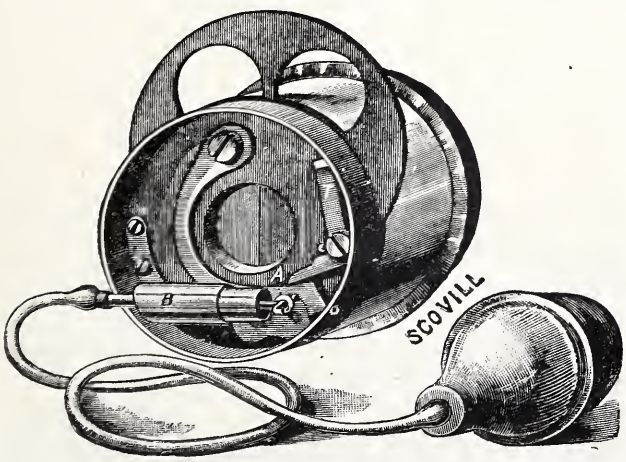
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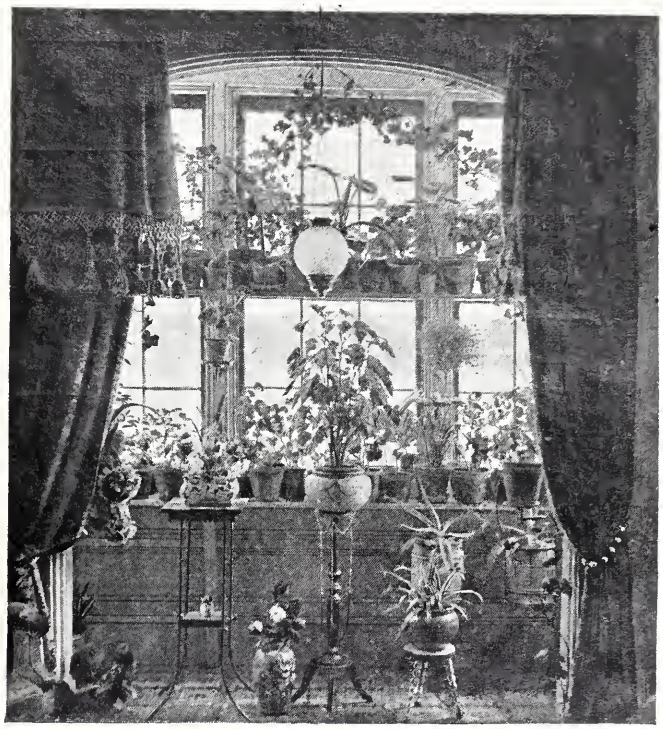
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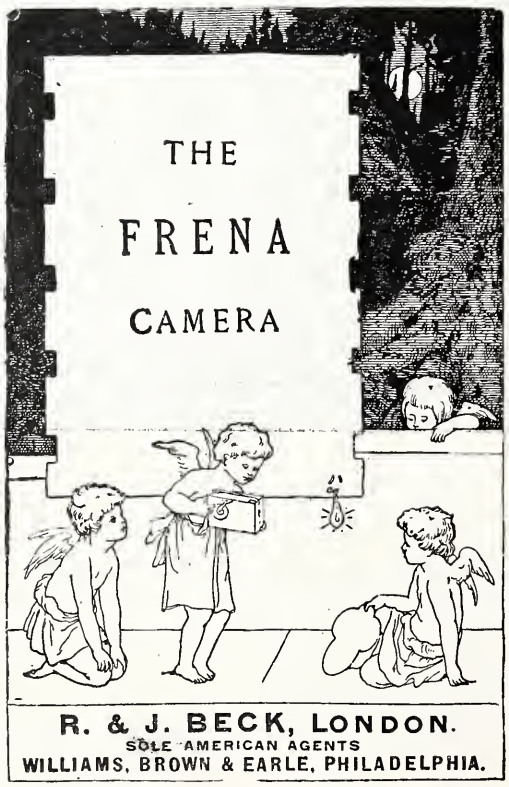
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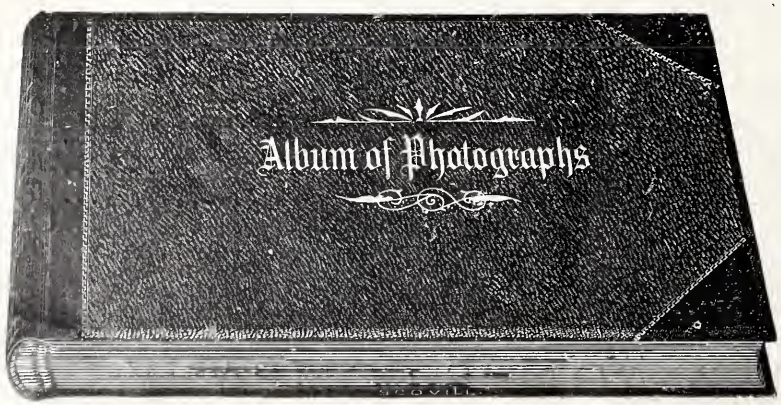
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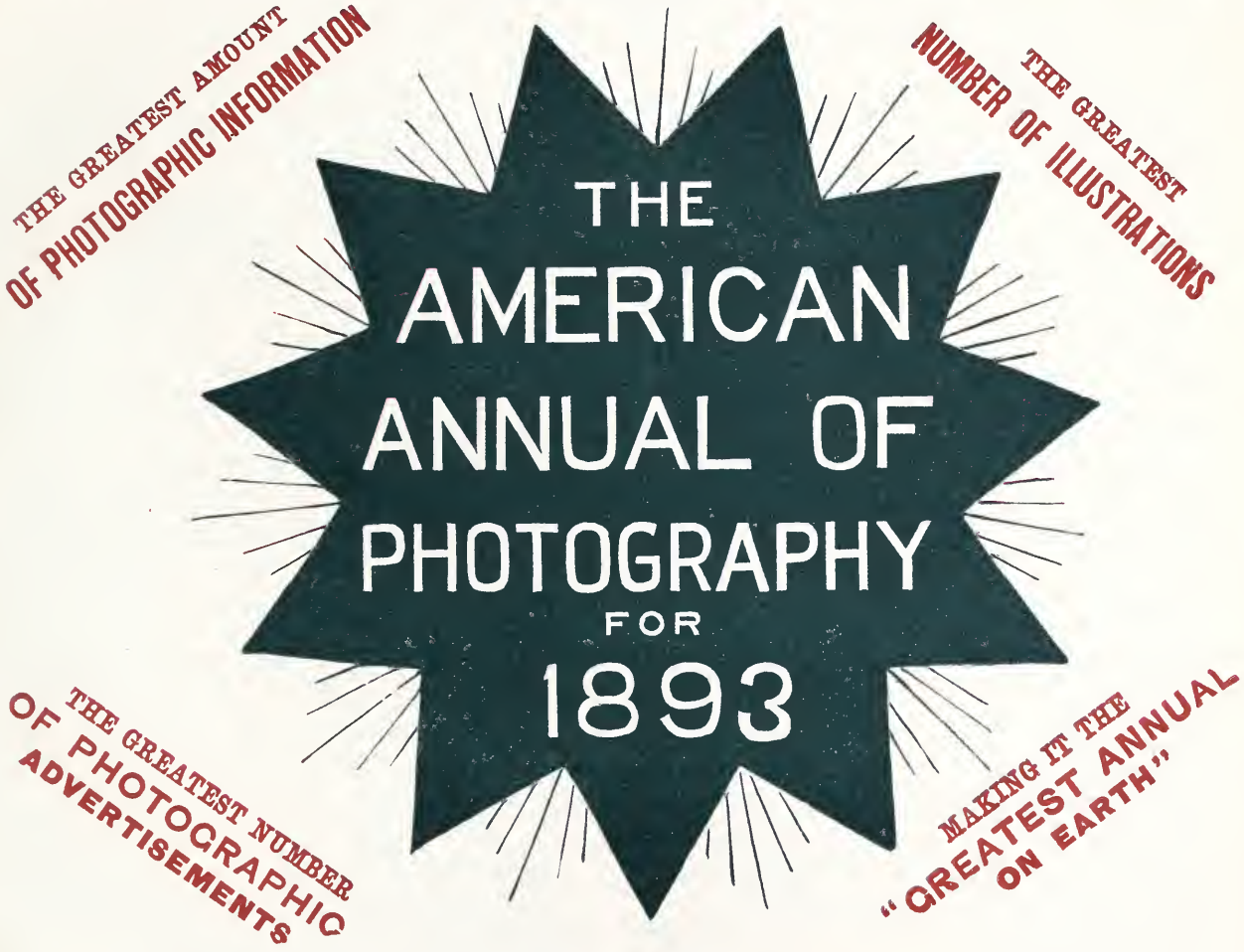
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(OVER.)



ALBERT A EDDY PHOTO

THE OLD HOMESTEAD

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. FEBRUARY 17, 1893. No. 596.

THE OLD HOMESTEAD.

OUR picture this week is from a negative by Albert A. Eddy, of Attleboro, Mass., and represents an old New England homestead of some historic claims. "The place was probably among those cleared and built upon in the early days of the settlement of Wrentham," writes Miss Fisher, of Wrentham, "and is located near the boundary line that marks the southwestern limit of Dorchester.

"The present edifice was erected in 1834 by S. M. M. Hawes, who, with his sisters, inherited the place from their father, Daniel Hawes. In 1891 those interested in the cause of Missions were made glad because a legacy of more than one hundred thousand dollars was bequeathed to Home and Foreign Missions by Miss Jemima Hawes, of Wrentham.

"The foundation of this handsome fortune was laid when the lady resided in the house here represented, and by her industry and skill in plaiting straw and converting it into bonnets (almost the only avenue of earning open to women in those days) acquired a neat little sum to deposit where it would accumulate rapidly.

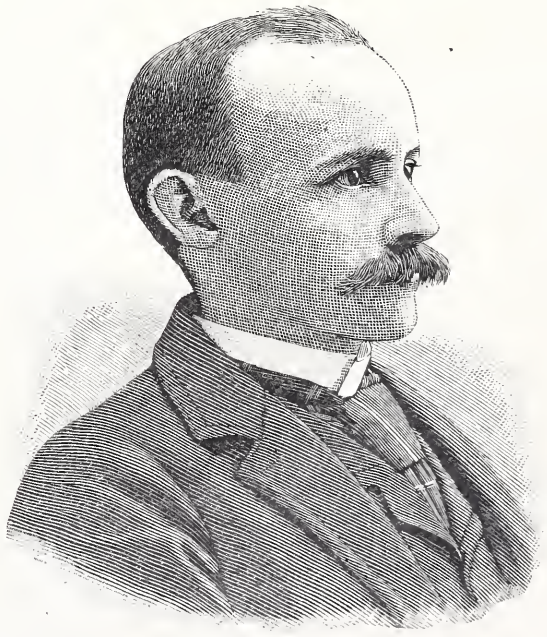
"In 1851, John Winch, a plain farmer, a man of intellect but quiet and unostentatious, became the owner of the little farm, and the children, whose names have been well known to the public, look upon the days passed in this old homestead as among their happiest. As all the family of seven children were rarely talented as musicians it may well be imagined that the walls of this cosy home have often rung to music that would have now most enthusiastic applause could it have been listened to by an audience who appreciated sweet harmonies.

"In 1868 the place again changed owners, becoming the home of Duncan Stalker and his family, and the latter still occupy it, Mr. Stalker having entered into rest.

"Shaded by the noble elm which shows its stately form near the foreground, embowered on the north by many fruit trees, with its flower borders, its spacious, neat lawns, it is truly a scene of beauty as it is approached from either direction; its white walls and green blinds presenting the prettiest possible contrast and harmony of coloring with the surrounding greenery. Small wonder that the city members of the family rejoice to come and rest, and draw in long draughts of health in the clear air and sweet odors of the summer, or in the crisp and invigorating air of winter."

AN ASTRONOMICAL PHOTOGRAPHER.

THE meteor photograph by Mr. John E. Lewis, of Ansonia, which we reproduced in our issue of February 3d, has excited so much interest in the



subject of astronomical photography in general, and in this particular branch of work especially, that we feel sure our readers will be glad to see the portrait of Mr. Lewis, who has done so much with

the camera in this direction, and also to learn something about him personally.

Mr. Lewis is a skilful photographer, though he employs his camera almost entirely in the study of astronomy. His telescope is the largest in aperture in the state of Connecticut, with the exception of the one at Middletown, but not excepting those of Yale University, and was planned and mounted by himself.

Mr. Lewis works at the Yale Observatory twice a week, and has the use of most of the instruments there. From his own observations of last July on Swift's comet, he has computed the elements and ephemeris of the comet's orbit. He has now an apparatus ready to attach to the Yale heliometer for carrying his camera, and expects to make some long exposures with much better results than he could do at Ansonia, as the Yale heliometer has a clock-work attachment.

Mr. Lewis showed the comet and meteor slides by the optical lantern before the Yale Mathematical Club, and his work has received the highest encomiums from those best qualified to judge of its real merits.

PRINTING IN COLORS.

WE reprint the following interesting matter from the *Amateur Photographer*, and we wonder why Mr. Kurtz, of New York, should have felt called upon to announce his results first in a foreign publication:

In the *Photographische Mittheilungen* for January 1st is issued an exquisite illustration of some fruit printed in colors from three process blocks. Undoubtedly this is the finest thing which has yet been turned out by this process, and we do not for one moment wish to decry it. But the editor, Dr. H. W. Vogel, in his comment on the same, remarks:

"We fulfil to-day our previous promise in giving to our readers a print in natural colors, and not in collotype, of which we have already spoken, and which have been prepared in considerable numbers during the past summer according to the Vogel-Ulrich process, but in letter-press print worked out conjointly by W. Kurtz and E. Vogel, Jr., in New York....This picture from natural (not painted) still life will prove to the reader the possibility of carrying out the process of E. Vogel and Kurtz. The surprising thing about the picture is not merely the colors but also the reality; the natural bloom of the peach, of the grapes, the moisture of the lemon, even the peculiar excrescences of the pine-apple are accurately reproduced....We can congratulate ourselves on having a German discovery which has been perfected on American soil under the hand of the master of autotypy, W. Kurtz."

Whilst we admit the perfection of printing, the correctness of the coloring, and the "stoffliche," or the correct simulation of the bloom, etc., we object to the "German discovery." We would point out to Dr. Vogel that Dr. E. Vogel is not the only man who has been working in this direction.

In September, 1890. Messrs. Waterlow printed from an oil painting by process blocks in three colors, and this was issued with *Land and Water*, September 27, 1890. Another supplement by the same process was issued by *Land and Water*, February 13, 1892, this being also from an oil painting. Another one was issued with the 1892 Christmas number of the *Gentlewoman*, printed on satin, and another on May 7, 1892, with the same paper. But we have a print in colors from three process blocks, which was an experimental one, it is true, of a group of still-life objects, not an oil painting, but which was rejected for the final collotype prints which were issued with the *Photographic Quarterly* for July, 1890.

How in the face of these statements Dr. Vogal can claim the process as a German discovery we fail to see, any more than one of our present plate manufacturers could claim to have discovered the gelatino-bromide process, because they have brought it to such perfection.

We do not know how far Dr. E. Vogel assisted Mr. Kurtz in his experiments in heliochromy, but if we may judge of the work done long before the young gentleman arrived on our shores, like the reproduction of "A Cavalry Man" by Remington, for instance, his help could not have amounted to much.

The Kurtz heliochromes are printed from high relief plates in three colors, the only method by which color printing can by made practical. Col. O. Volkmar said at one time: "We do not only want to make beautiful prints, but we want to print rapidly and cheaply." These three cardinal points in photo-mechanical reproductions constitute the feat which Mr. Kurtz has accomplished in his beautiful heliochromes.

PHOTOGRAPHY ABROAD.

COPYING LINE DRAWINGS BY THE GELATINO-BROMIDE PROCESS.

Mr. J. Wilde writes to the *Photo Nachrichten* that he obtains line negatives as clear as those made by the wet-collodion process in operating in the following manner: He adds from the beginning of the operation a restrainer compounded thus:

	A.	
Water	1000 c.c.	= 34 ounces
Potassium bromide.	70 grammes	= 18 drachms
	B.	
Water	1000 c.c.	= 34 ounces
Iodine	5 grains	= 77 grains

Mix the two solutions, and for every 100 c.c. ($3\frac{1}{2}$ ounces) of the developer add from 10 to 12 c.c. (170 to 204 minims) of the mixture.

If the development is conducted with the proper care the negatives become sufficiently intense for photo-mechanical printing processes.

Developers for White and Black Negatives (Copies of Engravings, etc.).

1.—A

Pyrogallol	6
Potassium metabisulphite	6
Ammonium bromide	6
Water, distilled	960

B

Ammonia, conc	15
Water, distilled	960

For use, mix by equal volumes.—*Mawson and Swan.*

2.—A.

Hydroquinone	15
Sodium sulphite	48
Potassium bromide	2
Water, distilled	960

B.

Sodium carbonate	20
Potassium carbonate	20
Water, distilled	240

For use, equal volumes.—*England.*

To intensify, immerse the negative, well washed, of course, in

Ferrous sulphate	100
Citric acid	30
Alum	30
Water	960

To which are added before use a few drops of a solution of silver nitrate.

***

On the Fixing of Negatives.

From his experiments on the advantages which may result from fixing the negatives by a neutral, alkaline or acid solution of sodium hyposulphite, Mr. Higgins concludes that the plain, neutral solution is the best which can be employed. It acts more rapidly and more surely than any other one, and has no secondary action on the character of the negatives.

I partly agree to this statement, says Mr. Dillaye in *La Science Illustrée.* I say partly because the acid baths have undeniable advantages, which are very useful in certain circumstances. One should not forget, in fact, that if the acid in presence of hyposulphite of soda, determinates a deposit of sulphur, it also evolves sulphur dioxide (sulphurous acid) whose discoloring power is efficacious when the gelatine film has a tendency to become yellow under the action of the developer. Moreover; as I have remarked, as well for the acid and the alkaline fixing, the blacks of the negative and its half-tints, specially, improve in transparency. Which amounts to say, in other words, that the acid or alkaline fixing baths weaken the negatives.

The real reduction of intensity occurs, however, after a long immersion of the plate. In the normal time of the fixing, this reduction is but fictitious, and this, for the reason that, in the ordinary fixing bath, the development still continues for a short period, while an acid bath, on the contrary, at once stops the action of the developer.

Therefore, it is advisable to develop thoroughly without fear of the formation of a slight veil which will disappear in the fixing operation, and to fix first in a plain bath until the silver bromide is dissolved, then to finish the fixing in an acid bath into which the plate should remain for sufficient time to bleach the yellow fog or diminish the too great opacity of the black.

***

Developing Solution with Glycine.

Dr. Eder gives in *Phot. Correspondenz* the following formula for the preparation of the glycine developer. The new reducing agent of the aromatic series is an oxyphenol of glycine,

$$C_6H_4 \begin{cases} OH \\ NHCH_2COOH \end{cases}$$

obtained by the action of chlor-acetic acid on amidophenol.

Glycine	5
Sodium sulphite, cryst	15
Potassium carbonate	25
Water	90

For use this solution is diluted with three or four volumes of water.

If it is desirable to employ the carbonate of sodium the developer should be compounded thus:

Glycine	3
Sodium sulphite, cryst	15
Sodium carbonate, cryst	22
Water	200

This developer can be employed as it is, or diluted if it is necessary to render its action less energetic.

In case of over-exposure potassium bromide is employed as a restrainer with one or the other solution.

The glycine developer acts slowly, but it gives remarkably pure and clear negatives specially well adapted to the photo-mechanical processes.

It is not a substitute for metol or amidol; it is a complementary developer.

PERSONAL RECOLLECTIONS OF JAMES CREMER.

THE remnants of "the Old Guard" of American photographic practitioners is again sorrowfully impressed, that another has been removed from its midst, James Cremer, having been called into the everlasting light.

Cremer was born of German parents in England, where his grandfather had emigrated in the early part of this century, and he himself had retained German manners and customs to a considerable extent and spoke well the language of his German ancestors.

I cannot say when and where he first embraced photography as a profession, but in early times he was engaged as expert and salesman by the old firm of Holmes, Booth & Hayden. Later on he was employed by the Anthony's and a firm in Boston, after which he repaired to Philadelphia, where he bought a small photographic supply house after the demise of its proprietor, Edward McClees, the brother of James E. McClees, who was also one of the pioneers in this country.

Through business connections a warm friendship soon sprung up between the two James' and I, being at that time an employee of McClees had frequent opportunity to meet Cremer and learn of his sterling character.

Cremer's great business tact, his energy and integrity in trade matters soon compelled him to enlarge his store and he moved to South 8th Street, back of the old and historic Buttler house in Chestnut Street. Here he branched out successfully in several directions, besides photographic supplies he dealt in frames, fancy cases, pictures of celebrities, stereoscopes and stereograms, and in the upper part of the building a portrait studio and reproduction atelier flourished.

Cremer earned here a competency and retired from business about in 1882 to enjoy in his old age the fruits of his labors.

A large circle of friends mourn his loss, for he was a kind, affectionate man, upright and strict in business matters, liberal to those in need and a photographer of more than usual abilities.

Charles Ehrmann.

NOTES ON SILVER CHLORIDES.

[American Journal of Science.]

EXPERIMENTS made by J. J. Acworth* at the suggestion of E. Wiedeman showed that by heating silver chloride to a temperature of 220 deg. C. it passes into a modification that was insensitive to light.

I think this change may be due to the complete driving off of moisture. Abney showed by a well-known experiment that silver chloride, when exposed perfectly dry in vacuo in a glass tube, was totally unaffected by light; but I have shown that fused silver chloride, poured into petroleum and placed in the sunlight without removing it from the liquid, was instantly darkened.

These three experiments taken together lead to the following conclusions:

1. Silver chloride dry and perfectly insolated is insensitive to light. (Abney's experiment)

2. The presence of atmospheric air does not restore the sensitiveness if the silver chloride has been absolutely dehydrated at 220 deg. C. (Acworth's experiment.)

3. The presence of oxygen is not necessary or important for the darkening of silver chloride. The presence of moisture is not essential; its place may be taken by another substance capable of taking up chlorine. This follows from my experiment above mentioned.

There is no doubt that silver chloride retains the last portion of water with great obstinacy. I have frequently tried to dry with silver chloride in hot air, so that it should lose nothing further in fusion, but never quite succeeded. There is always a loss, which may be roughly taken at half a milligramme, and from thence upwards to nearly one milligramme, in a gramme. When the water is thoroughly driven off, it is probable that the silver chloride is left in an insensitive condition. Acworth's experiments seem to show this.

So long as moisture is present the molecule of silver chloride easily breaks up, not merely by the action of light, but by the application of any form of energy. The part played by moisture in chlorine reactions is somewhat remarkable. It has been lately stated that absolutely dry chlorine has no action upon copper foil. As soon as a trace of moisture is introduced, energetic action sets in.

M. Carey Lea.

* Wied. Referate, 1890, p. 518.

FAVORITES.

There are men who their love for the moon confess
And every other light condemn,
But photographers never can meet success
Unless the sun shines down on them.



A PHOTOGRAPH OF SPEECH.

MOVEMENT OF THE MOUTH IN PRONOUNCING "JE VOUS AIME." (I LOVE YOU.)

INSTRUCTIONS FOR CARBON WORK.

[Reprinted from the Blair Camera Company's Manual.]

CARBON tissue is sold in rolls, or bands. Bands are made 12 feet long by 20 and 30 inches wide, and before sensitizing may be cut to any size desired. Transfer paper, flexible, support, and waxing solution are also required.

Carbon tissue is produced in various colors, which should be designated when ordering. Warm black, engraving black, purple, chocolate brown, portrait brown, sepia, red chalk, rouge, blue and green. For line work, views, etc., warm black or engraving black is recommended. For portraits, warm black, brown, sepia and other colors can be used with pleasing effect. For transparencies, use transparency black, or rouge.

Carbon prints are produced either by single or double transfer. "Single" when a reversed negative can be obtained. "Double" when printed by contact from ordinary negatives, in either case using the same tissue.

It is desirable to sensitize the tissue in as large pieces as convenient; one-half inch should be trimmed from the edges of piece after drying, as it is often less soluble than the remainder of the piece.

SENSITIZING SOLUTION.

Water.....	60 ounces
Bichromate potash.....	1 ounce

This solution may be used with good results, except in very warm weather when it will be found desirable to use instead.

Water.....	100 ounces
Bichromate potash..... ...	1 ounce
Carbonate ammonia.....	60 grains

The sensitizing solution should be used in a deep tray and kept at a temperature of from 40 to 50 degrees Fahr. Tissue may be sensitized by a gaslight or weak daylight as it is but slightly sensitive until dry.

To prepare the tissue for sensitizing cut it across the "band" in pieces one inch narrower than the length of the tray used to sensitize in. Roll *this piece* of tissue coated side in, so that the length of the roll will be the width of the piece cut.

Immerse this roll in the sensitizer and begin to unwind, rewinding into another roll as fast as it is unwound; this should be repeated several times, allowing the tissue to remain in the sensitizer from eight to ten minutes.

Take the tissue from the sensitizer and place it, coated side down, on a glass or other smooth surface and with a rubber squeegee remove the surplus solution.

Good results may be obtained by drawing both sides of the tissue over a glass rod after sensitizing, instead of squeegeeing, but the tissue will not be as soluble. To do this, fasten one end of the tissue to a stick of convenient length, and holding the same in one hand and glass rod in the other draw the tissue carefully over the glass rod. Hang in a well-ventilated *dark-room* to dry, where it will be free from dust and any gas or noxious fumes, and it will dry in from two or three hours. It is well to sensitize tissue for each day the night previous. If put in a tightly-covered tin box the sensitized tissue will keep several days.

Negatives for carbon printing require a mask of black paper called a "safe edge," to protect the edge of tissue not covered by the negative itself from the light. The tissue is about as sensitive as silvered paper, therefore requires about as long exposure in printing.

As a guide in printing, a single tint actinometer is used, experience with which soon enables one to judge how many tints a negative will require.

SINGLE TRANSFER.

After sensitizing and drying as directed, place paper on your reversed negative in printing frame (care should be taken that the tissue is in perfect contact with negative) and put out to print, together with actinometer, by which alone time of exposure must be judged. After printing immerse the print in cold water, together with a piece of *transfer paper* (which should be cut somewhat larger than the print), allowing them to remain there until they become soft and pliable or lie flat (usually from three to five minutes), then bring in contact, under water, coated side next the transfer paper, after which remove to a glass or other flat, smooth surface, and bring in more perfect contact with a soft rubber squeegee. First protect the tissue by spreading a wet rubber cloth over same upon which to apply the squeegee. Let dry twenty to thirty minutes, then immerse in clean water 80 to 90 degrees, increasing the temperature, if necessary, to make the paper pull off readily, keeping the print under water; the print will then be on the *transfer paper*. Wash evenly to remove the surplus color until the print begins to appear, by moving the print about, keeping it covered with water and face up; after the print appears the washing should be continued by splashing the water with the hand upon the face of the print, directing the water principally toward the shadows, or any part it is desirable to lighten, leaving the high-lights until the last.

After the print is washed, rinse *well* with cold water, then immerse for ten or fifteen minutes in a

10-per-cent. solution of alum to harden the print and remove the bichromate, wash again in clear cold water and hang to dry in a cool place free from dust.

If under-printed the half-tones in the high-lights may be lost, and a harshly contrasted print will be the result; but if properly printed when the shadows and middle-tints come up clear, the half-tones in the high-lights will be retained. Harsh tints and lack of half-tones in high-lights are caused by under-printing, or washing in too warm water. Flat prints or muddy high-lights, by over-printing or washing in too cold water.

Weak daylight may be used while washing as the tissue is but slightly sensitive when wet.

Double Transfer.

To prepare the flexible support, fold up a small pad of fine cloth, and wet it with a waxing solution, rub this over the flexible support and allow it to dry; again repeat this operation to make sure that the surface is perfectly coated after drying. Immediately before the print is put on, with another dry pad rub off all the surplus wax, leaving an evenly coated surface.

Proceed as directed for single transfer, only using a flexible support instead of transfer paper, from which, after print is dry, transfer to the final support. (With proper care the flexible support can be used over again a number of times).

When ready to transfer, immerse the print together with the transfer paper in cold water, and as soon as soft and pliable (usually from three to five minutes), bring together, remove and squeegee in perfect contact as before and hang away to dry. When dry, the print may be readily striped from the support. If any difficulty in stripping occurs it is due to imperfect waxing of the support.

Transparencies.

For transparencies a special tissue is used; this tissue may be sensitized in the usual manner, but where extra results are desired (as transparencies for enlargements, etc.) the tissue should be taken from the sensitizing solution and squegeed in contact with a waxed plate glass; when thoroughly dry strip from glass; tissue dried in this manner will lie flat and come in *perfect* contact with negative.

Print as usual, giving about double the exposure required for carbon prints.

To prepare glass for transparencies, make up a substratum solution:

Water	10 ounces
Gelatine	6 grains
Chrome alum	1 drachm 10% solution.

Dissolve the gelatine in the water in a bottle or other suitable vessel by heating in a water bath at about 100 degrees Fahr. then add the chrome alum a few drops at a time, shaking well after each addition until the whole is added, allow to cool and before using, filter.

Clean the glass thoroughly by rubbing with a tuft of cotton wet with alcohol, wash well with water, and while wet, flow with substratum solution allowing the surplus to run off, at once flow a second time and place in a rack to dry where it will be free from dust.

These prepared plates when dry are ready for use at any time.

After printing proceed as for single transfer except that print should dry about an hour before washing.

Care should be taken to place all carbon prints to dry where they will be free from dust. With Transparencies for enlargements this is of great importance, as all defects are magnified in the negative.

To enlarge, place transparency in camera, *film side* to the lens (making a reversed negative) for carbon printing, or the *glass side* to lens if for silver print.

Remarks.—The curl in the tissue caused by rolling up in the box may be removed by putting it in a damp place. A large box containing a wet cloth (not in contact with tissue will answer).

The tissue is not affected by *light* until it is sensitized.

After sensitizing, gas or other noxious fumes will make it *insoluble*.

It is advisable to use a deep printing frame with strong springs that the negative and tissue may be brought in perfect contact.

A plate glass in printing frame will prevent breakage of negative.

Carbon prints cannot be mounted while *wet*; after drying trim, and moisten by placing between damp blotters. Mount with starch paste.

LOCAL REDUCTION.

It sometimes happens that the photographer is called upon to take a family group in which one or two of the younger children may be light and fair, while the parents, if country people, may be much tanned and, of course, much darker. To photograph such a group successfully the exposure must necessarily be short, consequently to develop in the best way possible the children's faces will be over-developed before those of the parents will be brought up to printing intensity.

Such a negative can be made to print uniformly by local reduction, as follows: Make a reducer (similar to "Farmer's"), hypo solution 1 to 16, to which add just before use a little of a saturate solution of red prussiate of potash. After the negative is washed and while still wet, go over the intense parts using a soft brush or even a swab made by tying a rag to a stick. Rinse off under the tap occasionally to see what you are doing, also that the reducer does not go beyond where it is desired.

You can further improve such a negative, when you come to print, where the shadows are too strong by applying India ink to the glass side by means of the end of the finger, then scrape off the surplus around where it is desired to be lightened up with point of stick.

I may add that it is of course necessary to thoroughly wash a negative after reducing. Bromide prints may be reduced in the same way.

Frank F. Woodard.

Correspondence.

TWO MORE ADVOCATES OF THE PRINT EXCHANGE.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: Having read your notice, "Will You Exchange Prints?" in No. 591 of your journal, we beg to say the following: We have, during the last few years, made a number of negatives, principally expressing the character and scenery of our State, and should be more than pleased to exchange with some of our brother amateurs from the Eastern States. The scheme of exchange we both think a grand one, and we shall avail ourselves of the advantages that are sure to result from the same, and you may surely count on our hearty co-operation if the proposition materializes.

Very respectfully yours,

C. W. Parker,
Emil de Neuf.

SEATTLE, Wash. (P. O. Box 581), Jan. 30, 1893.

Henry J. Newton writes as follows, in regard to THE PHOTOGRAPHIC TIMES Print Interchange:

"I am very much interested in the picture exchange that is being discussed in THE TIMES. If properly organized it can be made a valuable instrument as an instructor, especially to the amateur."

Mr. Newton then goes on to say, "your illustration in to-day's TIMES (February 10th), has much more than ordinary interest to me."

THE POUND.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: In your issue for February 3d in the article "The pound weight and its history," I notice a misstatement which should not go uncorrected, for your paper is looked to as an authority on the subjects of which it treats, and therefore should be correct. Mr. Taylor says in the article mentioned, "Weight has always been determined from measure. The talent was the standard obtained from a cubic foot of water and the mina being one hundredth part of the talent is identical with the modern pound." A cubic foot of fresh water weighs approximately 62½ pounds, therefore one hundreth part of it cannot weigh one pound. Johnson's Cyclopedia says, page 681, Vol. 7, Talent, "an ancient Greek weight containing 60 minas, about 82 pounds avoirdupois." "There was also a gold or Sicilian talent of about ¾ of an ounce avoirdupois, called also the little talent." The same authority says page 318, Vol. 1 avoirdupois. "A pound avoirdupois contains 7000 grains, the legal standard of which is such that a cubic inch of water weighs 252,458 grains." A cubic foot of water weighs 997.17 ounces avoirdupois.

Charles S. Beach.

Notes and News.

A Change.—Thus writes an amateur: "I have been 'pushing the button,' and letting some one else 'do the rest,' and now I want to let some one else 'push the button,' while I 'do the rest' for a while."

The Worcester Camera Club gives a competitive exhibition of prints during the week of February 22d. This is the second exhibition of the kind, given by the club since its organization, last May.

A Very Perfect Photograph.—"Her Imperial Highness the Archduchess Maria Theresa of Austria is both a painter and a photographer. A very perfect photograph of her luxurious studio, from one of her own negatives, forms a recent collotype illustration in our American contemporary, THE PHOTOGRAPHIC TIMES," writes the editor of the *Photographic News*.

William Bedford, late President of the Photographic Convention of the United Kingdom of Great Britain, died of typhoid fever, Friday, January 13th, in the 46th year of his age.

"Hand Camera and Lantern Review" is the name of a new fortnightly journal devoted to photography and the optical lantern, published in London.

The Convention of the Photographers' Association of America will be held in Chicago next summer from July 18th to the 21st inclusive, in the New Second Regiment Armory, corner of Washington Boulevard and Curtis Street.

A diagram of the interior of the hall devoted to space for the exhibit by manufacturers and dealers has been sent out by the Secretary, Adam Heimberger, New Albany, Indiana, and further particulars may be obtained by addressing him.

GRAND PRIZE OFFER BY THE EASTMAN KODAK COMPANY.

In order to obtain material for its exhibit at the World's Columbian Exhibition, the Eastman Kodak Company makes the following liberal prize offers :

Class A.

For prints from three negatives not under 14 x 17 :

1st prize	$100
2d prize	50
3d prize	25
4th prize	25
5th prize	25
6th prize	25

Class B.

For prints from best negative to full length figure or group (suitable for bromide enlargement) not smaller than 5 x 7, nor larger than 10 x 16 :

1st prize	$50
2d prize	25
3d prize	15
4th prize	10

Conditions.

Unmounted untouched prints on solio paper only will be accepted.

Two prints from each negative must be sent (printed ready for toning).

Prints from any number of negatives may be entered by any competitor, but in Class A the best three in each collection will be selected by the judges for the competition.

The company will tone and mount all entries in uniform style. In case of defects in prints it will notify the maker to send duplicates.

The awards will be made on the excellence shown in the lighting, posing and general quality of the negative as shown by the print.

The offers in Class B are made to secure negatives for enlargement. Competitors in this class must agree to loan them to the company for the purpose of making the enlargements if required. The company will select from the solio prints sent in such negatives as appear best suited for enlargment and notify the owners, who will then send them to the company.

The company will pay express charges on negatives both ways and be responsible for the safe return of such as reach it in good order. In case of damage to any negative while in its hands or *en route* on the return the liability of the company not to exceed $5 for each negative.

The company will make the best possible enlargements from all such negative as it calls for and the award of prizes will be made upon the enlargements.

The company to become the owner of all prints sent in and to have the right of exhibiting them and the enlargements at the World's Fair or elsewhere.

All large prints must be rolled in a tube, small prints packed flat between pasteboard, all to be forwarded by mail post-paid. Each competitor will be given a number, names being withheld from the judges until after award.

All prints exhibited at the World's Fair will be plainly marked with the name of the photographer.

This is the grandest opportunity to win a prize with little exertion ever offered.

Remember, only unmounted, untoned solio prints to be furnished by competitors. *The company "does the rest."*

Owing to the prominence of the company's exhibit, prize winners will attract the attention of hundreds of thousands to their work.

Open to everybody.

All entries in Class B close March 15th. In Class A April 1st.

Judges will be announced hereafter.

Awards to be announced May 1, 1893.

BASIC SALTS OF SILVER.

Mr. Carey Lea's Latest Research.

Few questions in photographic chemistry have more interest than those relating to the argentous series, or the basic compounds of silver, especially as not one of these bodies has yet been obtained in such a condition as to justify a very confident opinion as to its chemical constitution. Some recent experiments of Mr. Carey Lea, which are described in the *American Journal of Science*, go far, however, towards establishing the existence of the argentous series.

According to the author's previous researches, the argentous compounds, with the halogens, or silver hemihaloids, even if they exist in the free state, must be very unstable substances, but acquire stability by uniting with the normal haloids. In the same way the hemisulphate, which is not known to be capable of separate existence, becomes stable by union with the normal sulphate. The limitation of this analogy lies in the fact that the last-mentioned combination occurs in definite proportions, which does not seem to be the case with the halogen compounds.

The basic sulphate of silver (silver hemisulphate) is formed as a double salt with the normal sulphate of silver, by the joint action of sulphuric and hypophosphorous acid on a silver salt. Hypophosphorous acid has but little action on silver sulphate already precipitated, but it is different when the silver sulphate is formed in presence of hypophosphorous acid.

Several silver salts may be used, as, for example, the nitrate, phosphate, and carbonate. The latter is perhaps the best, because the action with the nitrate is very rapid, and with the phosphate very slow.

A weighed quantity of silver nitrate is precipitated with an excess of alkaline carbonate, and washed. The silver carbonate is then treated with a solution of alkaline hyposulphite acidified with sulphuric acid. All the alkaline hypophosphite of commerce contains much more than a trace of chloride; this is best got rid of by adding to its solution a little solution of silver nitrate, stirring well at intervals, letting stand for twenty-four hours, and filtering. This filtrate, with addition of sulphuric acid, is to be poured over the moist silver carbonate and constantly stirred. The reaction is complete in twenty or twenty-five minutes, when a bluish-black film of reduced silver begins to form on the surface. Further action is then cut short by neutralizing the liquid with alkaline carbonate. The precipitate is next to be washed several times by decantation. Very pure distilled water is, of course, needed throughout.

Convenient proportions are : 40 grammes silver nitrate

precipitated with excess of alkaline carbonate. Of sodium hypophosphite, 100 grammes, dissolved in 650 c.c. of water, are treated with a little silver nitrate, and after standing and filtering, 4 c.c. of sulphuric acid are to be added, and the liquid poured over the silver carbonate. After a few minutes, 6 c.c. more of sulphuric acid, diluted with a little water, are added by degrees. With this second quantity of sulphuric acid the characteristic reddish-brown color of the substance first appears.

The crude product obtained in either way is to be purified with nitric acid. Acid of 1.42 is diluted with three times its volume of water, and of this dilute acid a quantity is taken about double in volume to that of the precipitate and of the water left after decanting closely. After a time some effervescence takes place, but the mixture does not become warm. After standing for three or four hours over the precipitate, it is to be poured off and the precipitate washed. This treatment with acid is applied three times: the first removes a good deal of silver, the second a little, the third a trace. Each time the acid is left three or four hours in contact. The product is then washed by pouring on it a large quantity of boiling water. This is repeated four or five times, each time (except the first) placing the vessel in a water bath kept at 100 degs. C for several hours.

The product is either dried in the air or (for analysis) at 100 deg. C. It forms a bright brown substance, permanent in the air, changing to violet when kept for some time at 160 deg. C. It has the peculiarity that when water is poured on it, it makes a sharp, hissing noise. This takes place when the air-dried substance as well as that dried at higher temperature, and as much with the former as with the latter.

These proportions and this mode of operating are those that were found to give the best result. But the substance is formed under a great variety of conditions. It seems impossible to bring a silver salt in contact with alkaline hypophosphite acidified with sulphuric acid without producing more or less of it, but its presence is often completely obscured by reduced silver. A mass thus obtained that looks perfectly black and might be supposed to contain nothing but metallic silver will leave, when treated with nitric acid, a bright brown residue of the double sulphate. We have here, as before, an analogy with the photosalts. For it will often happen that a blackish mass, containing metallic silver and mixed or combined silver chlorides, will, when treated with nitric acid, resolve itself into bright purple or rose-colored photo-chloride.

All the specimens of this substance contain a little phosphoric acid which cannot be removed.

It is possible that the silver phosphate may be combined in definite proportions, and the approach to uniformity of composition somewhat favors this idea. But such a view would require the assumption of a large, perhaps too large a molecule.

The most reasonable interpretation of these results is that we have to do with a double sulphate of silver hemioxide and protoxide in which a portion of sulphuric acid is replaced by phosphoric. The proportion of phosphoric acid seems to nearly constant, three concordant analyses having given 2.09, 2.30, and 2.18, with a mean of 2.19.

When the double salt is placed in contact with excess of dilute caustic soda it blackens; being converted into a mixture of the hemioxide, which is intensely black, and the normal oxide. This decomposition, however, takes place much more slowly than with the salts of the protoxide, so that (unless heat has been applied) if, after ten or fifteen minutes, the alkali is poured off and the oxides are dissolved with dilute nitric or sulphuric acid, a considerable residue is found of the red-brown double salt which has escaped decomposition.

With continued treatment with caustic soda—that obtained from metallic sodium was used as being absolutely free from chlorine—the decomposition is complete.

The double salt is more readily decomposed by hydrochloric and hydrobromic acid, or even by alkaline chlorides or bromides. Under their action it instantly blackens. That part of the silver that exists in the form of hemisulphate is converted into black hemichloride or hemibromide. The extreme instability of these hemihaloids causes them spontaneously to resolve themselves into metal and normal haloid. They rarely remain as hemihaloid for more than an hour or two, and often for much less time. The change is often quite sudden, and is easily observed by the alteration of color, the black of the hemihaloid passing into the metallic gray color belonging to a mixture of normal haloid with metallic silver. The hemibromide seems to be little less unstable than the hemichloride.

A general consideration of all the reactions seems to indicate that the action of sulphuric acid and sodium hypophosphite on silver carbonate does not lead directly to the production of the double salt, but that the hemisalt is produced in excess, often in large excess; that the nitric acid oxidizes this excess, being able to attack the *free* hemisalt, but not that portion which is combined with the proto-salt, and so rendered stable. If it were possible to control the formation, it is not improbable that a pure hemisulphate might be obtained. But the action of the hypophosphite tends so strongly to carry the reaction still further that reduced silver appears, and in removing this with nitric acid the double salt results.

There is reason to suppose that numerous other compounds of silver hemioxide with oxyacids may exist. These compounds cannot be obtained by acting on the normal salts with sodium hypophosphite or with hypophosphorous acid; but it appears probable that they may be produced when the normal salts are formed in the presence of sodium hypophosphite. If to the last-named salt we add a solution of a salt capable of precipitating silver nitrate, and then further add silver nitrate, we obtain precipitates which, after standing some hours with frequent stirring, appear to obtain compounds of silver hemioxide. But these products do not resist the action of nitric acid; consequently, there appears to be no means of purifying them, and of deciding with certainty as to their nature.

When sodium citrate and hypophosphite are dissolved together, and a little silver nitrate added to get rid of chlorides, then, after standing and filtering more silver nitrate is added, a precipitate is obtained which, after a time, appears to contain silver hemicitrate in an impure form. When a little of this precipitate is put into much water containing a trace of ammonia (five or six drops to 100 c.c.), a fine rose-red solution results.

Most oxysalts of silver are darkened by light, and there is a strong probability that many other hemisalts may be formed both by the action of light and also by purely chemical means.—*Photographic Work.*

PRESSING THE BUTTON.

THE holiday season has been adding as usual to the ranks of the army of amateur photographers. It seems easy nowadays to take pictures. The chances of failure with the application of recent improvements and an ordinary amount of common sense has been reduced to a minimum and fine specimens of photographic work from the hands of young people yet in their teens are common. The craze for amateur photography is not dying out in spite of the abuse to which the votaries of the art have been subjected; in spite, too, of the efforts of the funny paragraphist to make the labors of amateur photographers ridiculous. Few persons who enter the ranks of the amateur army ever leave it. A few satisfactory pictures make them slaves to the art for life. The interest may lag at times, the camera may lie away unused for months, but the desire to make pictures will return at spasmodic periods and the box will be brought to light then. The winter season is not a stimulant to the artist, but summer vacation days invariably bring out the longing to take pictures. There is so much in life that one wants to render undying to the sight and to the memory. Beginners do not always realize that certain rules must be observed in the photographic art, and early failures are often disheartening. The trouble is that in these days of touching a button and somebody else doing the rest, the idea prevails that photographing successfully is much easier than it really is. Buckley had that notion. He is a pretty clever little chap at other things, and he could not understand why he made so many failures when he began operating with a detective camera. He had no ambition beyond the hand instrument, but he had a strong desire to take pictures. The notion came to him naturally because he had many friends affected with the photographic craze. There was one particular chump among his acquaintances who made remarkably good pictures, and it nettled Buckley to think that a person whom he despised should draw so much satisfaction from so simple a recreation. He wanted to show this chump exactly what he could do if he had a camera, and then he had a strong desire to make pictures of the wife and babies, and take them up the Hudson as a timely holiday gift for the old folks. He intended to spend Christmas day with them and he thought it would be grand to photograph the old house and the barn and Bill's horse and the chickens, the ducks and the pigs. He made a confident of a tolerably clever amateur, and asked his opinion on the subject. Of course Buckley's idea was encouraged, and a week or two before Christmas the hand camera was purchased and several dollars were invested in developers, trays, ruby lamp, printing frames, toning and fixing solutions, and the other odds and ends necessary to successful picturing-making. He took hints in development and other steps in the processes from his friend, but in a lordly, top-lofty, condescending way that was annoying. "Simplest thing in the world," he said; "no trouble to take pictures. I'll go home, get a few groups of the wife and children and bring the plates back to your room, old man, and develop them there. You may look on, but I guess it will be all right."

(*To be continued.*)

Photographic Societies.

THE SYRACUSE CAMERA CLUB.

THE annual meeting of the Syracuse Camera Club occurred on the evening of Jan. 6. The following officers were elected: President, Amos Padgham; Vice-President, Geo. Timmins; Secretary, Herbert F. Smith; Treasurer, Edward C. Howe. The directors of the club are the above officers, and Edward H. Burdick, John R. Clancy, Fred Frazer, and John D. Pennock, all of whom were elected at this meeting, Messrs. Padgham, Smith, Clancy, Frazer, and Pennock being re-elected. Mr. Will H. Olmsted was elected Lantern-Slide Director.

The report of the retiring Treasurer, Will H. Olmsted, shows the club to be in a very prosperous condition, financially and otherwise.

After the meeting the retiring Board of Directors tendered the members of the club a sumptuous collation. Speeches followed by President Padgham, Dr. Ely Van De Warker, Rev. Wm. Wilson, and others, the burden of their remarks being that the time had come for the club to branch out, enlarge its rooms and facilities, and do something in the direction of increasing the social features of the club amongst its members.

A resolution was unanimously passed requesting the directors to engage rooms adjoining those now occupied by the club. These rooms have since been engaged by the directors. They face on Salina Street, and will add much to the pleasantness of the club quarters. The rooms are being tastefully decorated, and a committee from the club has been appointed to furnish them. The rooms are to be used for a library, committee room, smoking room, etc. The duties of the House Committee will probably be enlarged for them to provide social entertainments, etc.

Knowing your interest in the camera clubs throughout the country, and believing others may be interested in our welfare, I send you the above facts for publication in THE PHOTOGRAPHIC TIMES, if you so desire it. Also, if you desire it, I will send you any news items I may have in the future. Respectfully yours,

Herbert F. Smith,
Secretary.

The Editorial Table.

We acknowledge with thanks bound volumes of *Wilson's Photographic Magazine* for 1892. They come to us handsomely bound in half leather in two parts.

Wilson-Hood-Cheyney Co. have sent us their catalogue of Ross lenses, for which they are the American agents. It is a very complete catalogue, giving full particulars concerning this excellent lens.

We desire to call the attention of THE PHOTOGRAPHIC TIMES readers to the Bargain List which is published in this issue of the magazine, as it will enable them to obtain many genuine bargains.

The goods enumerated in this list are all in excellent condition, and are offered at the extremely low prices attached to reduce an over-stock, or for some such similar reason.

The Ideal Crayon Co., of 573 Masten Street, Buffalo, N. Y., has issued a very complete and attractive catalogue which includes some valuable advice for photographers. The Ideal Crayon Co. are jobbers of portraits, frames and enlargements of every description. Our readers will do well to bear them in mind when they desire any goods in this line.

Columbian Coating.—John Carbutt, the veteran dry-plate maker, has applied for a patent for his "Columbian Coating." It is a medium prepared for coating the back of plates, the coating being in optical contact. It can be stripped off after the plate has been placed in the developer, or when desired to examine for density. It does not discolor the developer nor soil the hands, and forms no dust in the box.

When purchasing the Columbian Coating, see that it has Mr. Carbutt's fac-simile signature.

ART.

See! This is how she standeth,—
A woman, calm and ageless,
Clad only in a garment
Of pure and spotless flesh;
While round her shrine forever
Circle the eager faces
Of those who serve her gladly,
Whose souls she had in mesh.

Of gold in grain or nugget,
Of fruits and dewy blossoms,
Of lambs upon her altars
She hath no joy or heed.
She only asketh heart-blood
Wrung out in toil and anguish:
Its drops of shining crimson
Are sweet to her indeed.

Yet see the upturned faces!
Their lips are dry with fasting,
Their cheeks are gray and sunken,—
Yet, ah, the rapturous eyes!
They ask no joy but toiling,
They ask no hope but serving,
And with their life-blood furnish
Her pleasing sacrifice.

No golden world-fruit tempts them;
Love bares her rosy bosom,
And smiles between her tresses
Vainly on such as these.
The youths who take her service
Pledge to a jealous goddess,
Who will have naught but labor,
And labor on their knees.

She giveth this for guerdon:
Age that descends in youth-time,
Lit by one star's faint shining
That struggles through the gloom.
A name in ink that fadeth
Writ on Fame's musty pages,
Mounted by the fools and happy,
And scrawled upon a tomb.

—*From "Songs about Life, Love and Death," by Anna Reeve Aldrich.*

HE'LL BE MARRIED SOON.

"I had my household goods photographed and I showed the result to my lady love."

"What did she say?"

"Said all that was missing there was a household goddess!"

Queries and Answers.

---

26 R., of Wellsville.—On page 164 of "The Annual" Alfred Stieglitz recommends asphaltum varnish for backing plates.

It seems to me that a black ferrotype plate placed back of plate would produce as good results and be much more simple. If a new plate has too bright a surface it is a very simple matter to remedy it.

26 *Answer.*—That will never be of effect. The color, whatever it is, must be in absolute contact with the glass.

27 JENWICK U., Mass.—1. What is the reason for prints adhering so tenaciously to glass, after being squeegeed thereto?

I have polished the surface of 5 x 7 plates, then squeegeed prints on them, but when dry, I could not by any means remove them.

2. Is it possible to get a fairly good light for portraiture in a room having two south windows and two west windows. Room 16 feet square and 8 feet 6 inches high?

3. With such a room and light, what would be the minimum exposure, using Carbutt's Eclipse plates?

27 *Answer.*—1. The glass not perfectly clean, or picture and glass being exposed to heat, when together Your common glass is not good enough. Use good plate glass. Better than anything else is a tin plate (ferrotype). One 10 x 14 costs but 15 cents.

2. It is. Utilize but one window for direct illumination, shade the other with thin, white muslin or cheese cloth. It will give general light, and by its means the exposure will be shortened.

3. That is impossible to tell. We do not know the quantity of light that comes into play, and you do not state what objective you work with.

28 F. P. CHANDLER.—Negatives fixed in the hypo-alum bath show sometimes in parts and sometimes over the whole plate a sort of opalescence or turbidness. What is the cause of it, and how can it be taken off? I develop with hydrochinon.

28 *Answer.*—The developer has nothing to do with it. The opalescence is probably caused by sulphur separated from the fixing agent and retained within the film. The effect is more noticed with iodo-bromide then with pure bromide emulsion. Sulphurous-acid water or a 5 per cent. solution of oxalic acid will remove the opalescence within a few minutes. We advise to fix all your plates in the acid-hypo bath.

29 MARGARET L. wants to mount albumen prints on plain albumen paper. What means are there to coagulate the albumen enough to permit of moistening?

29 *Answer.*—Soak the albumen paper for eight or ten minutes in absolute alcohol, hang up to dry, and calender it. Bichloride of mercury has been used for the same purpose, but if the mercurial salt is not thoroughly eliminated by washing in water, photographic prints mounted upon it would soon fade away in parts or *in toto*.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

SOLD OUT! SOLD OUT!

THE publishers of "The American Annual of Photography and Photographic Times Almanac" for 1893, beg to announce that the entire edition consisting of over 18,000 copies has been exhausted, and that they are unable to fill further trade orders.

They offer to announce in these columns without charge, the name and address of any dealer who may still have a few copies for sale. They request that such dealers will kindly notify them at once, as they are constantly receiving requests for the "Annuals" which they cannot fill and they wish so far as possible to facilitate the means by which every one who desires a copy of the book may obtain it.

A NEW PHOTOGRAPHIC CHEMISTRY.

"No one will deny," writes Mr. W. J. Harrison in the introductory preface to his latest contribution to photographic literature, "that a knowledge of chemistry is absolutely necessary to the proper comprehension of photographic processes. Photography, is indeed but a branch of applied science, and the photographer who is ignorant of this science is only a worker 'by rule of thumb.'"

With the intention, therefore, of enabling the practical photographer to equip himself with the very desirable knowledge of chemistry, and to "assist in the abolition of photography by rule of thumb," Mr. Harrison set out, over two years ago, upon the herculean task compiling a chemistry for photographers, which should not only possess the merit of treating the subject as comprehensively as its importance demands, but the additional advantages of simplicity of style, and of being written "up to date."

The work completed, neatly printed, and strongly bound to stand the wear and tear of laboratory reference, lies before us. A careful reading enables us to say with confidence that the working photographer could neither desire nor find another book upon the chemistry of his profession as helpful or as comprehensive as that here noticed.

For practical purposes, the book may be divided into three parts, the first nine chapters being devoted to the elementary theory and laws of chemistry, with tabular lists of chemical elements, and chapters upon the books and apparatus required by the student, etc,; chapters ten to thirteen, inclusive, are given up to the consideration in alphabetical order of the chemicals used in photography; while the eleven remaining chapters, which complete the work, present the chemistry of each of the chief manipulatory processes in turn, beginning with the chemical composition and preparation of sensitive surfaces, running through the theory of the latent image, development, orthochromatic photography, the various printing processes in every-day use, reduction and intensification processes, and ending with an elaborate consideration of the chemistry of "toning" and "fixing" processes. Of these three parts, as may readily be imagined, the third division which occupies the greater half of the book, will receive most attention from the photographer.

In this part of the work numerous formulas are given, by which almost any desired modification in practice or results can be effected by the intelligent reader, and the experience of many eminent photographers, and their methods are given in detail.

It is important to note that, throughout the entire work, the author treats his subject from a historical point of view, presenting not alone the theories and practice of to-day, but an account of the several phases which the chemistry of photography has assumed throughout its history. This treatment gives a value to the work which, for the needs of the photographer of to-day, can hardly be overestimated.

If we may suggest anything in the line of improvement in future editions, it is that the acid sulphite fixing bath should receive more attention than in the present edition is devoted to it. The question, whether acid fixing is advantageous or desirable, is one which has not yet been definitely determined by a sufficient concensus of opinion upon one side or the other, and we believe that the presentment of authoritative data upon the subject in such a work as this would materially aid in its solution.

In conclusion we would earnestly recommend this new chemistry to all of our readers, especially to the innumerable correspondents who during the last quarter of a century have so continually demanded a simple, practical, and thoroughly reliable guide to the chemistry of their work. Mr. Harrison deserves and will surely obtain great praise for the immense research and labor required for the worthy completion of his "Chemistry," which will, we are confident, take the place so long held by Hardwick's Manual Chemistry, familiarly known of old as "the photographer's Bible."—*Wilson's Photographic Magazine.*

The Chemistry of Photography. By W. Jerome Harrison. An important work, which should be in the hands of every photographer. The scope of the work is exhaustive, the text clear and comprehensive, while the general appearance does great credit to the publishers.—*The American Journal of Photography.*

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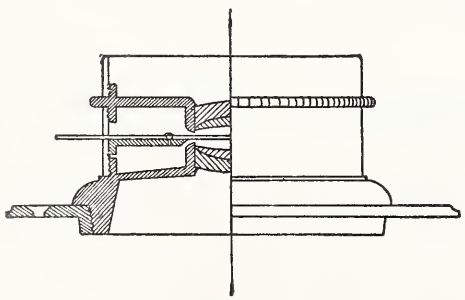
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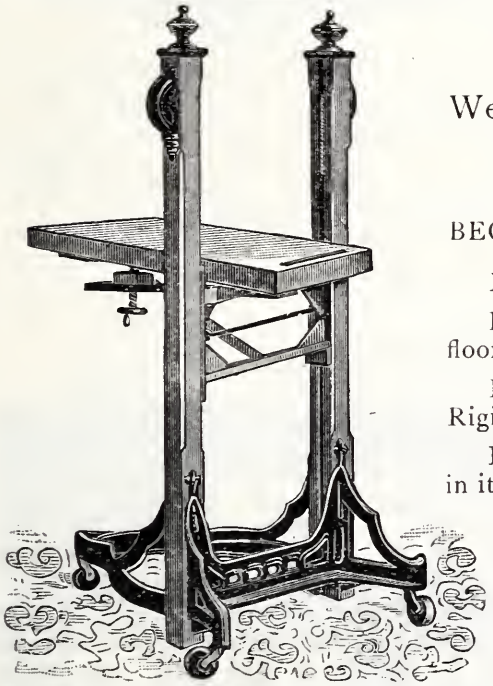
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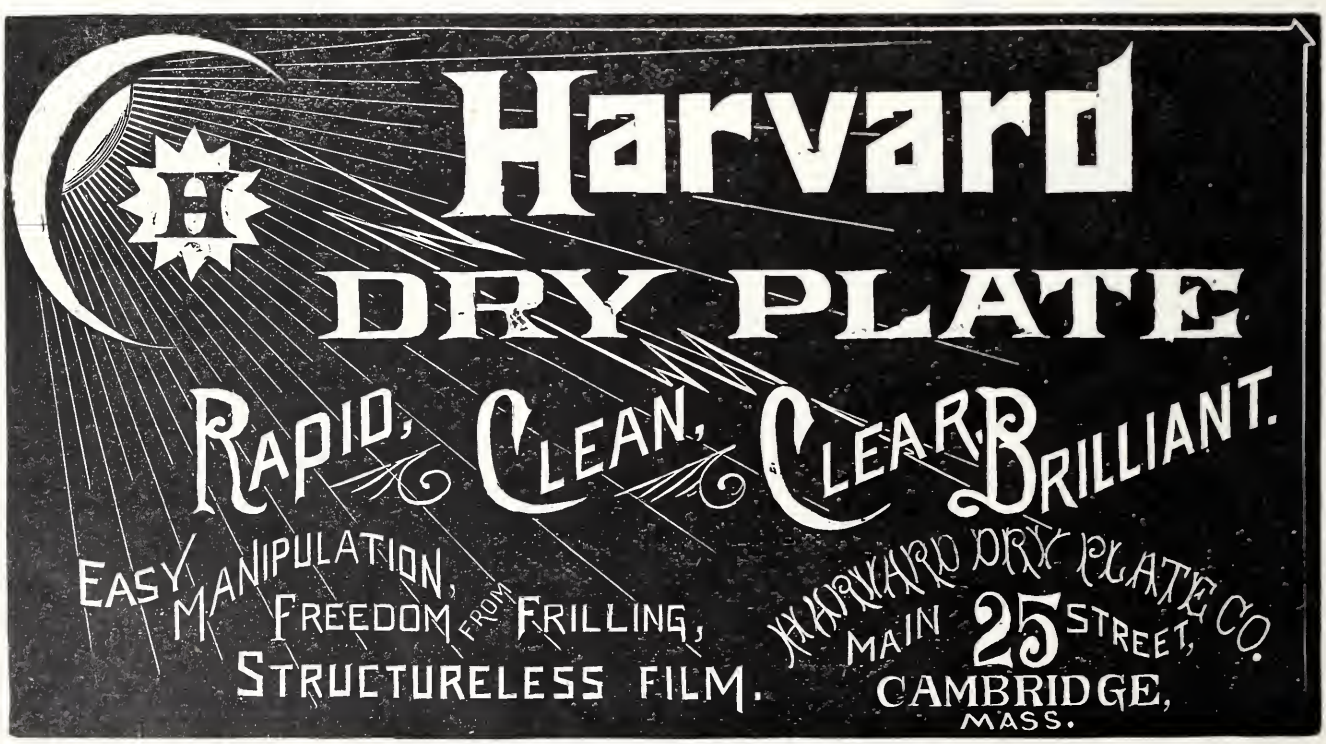
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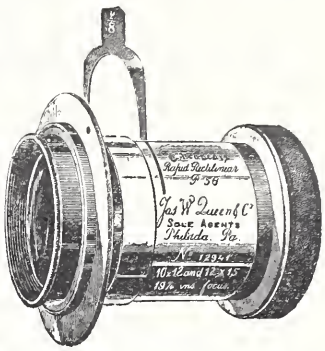


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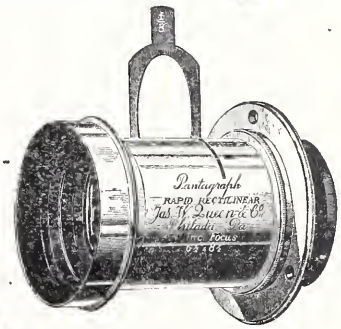


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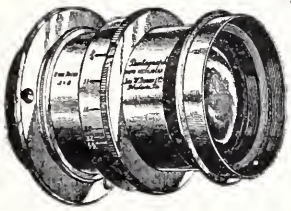
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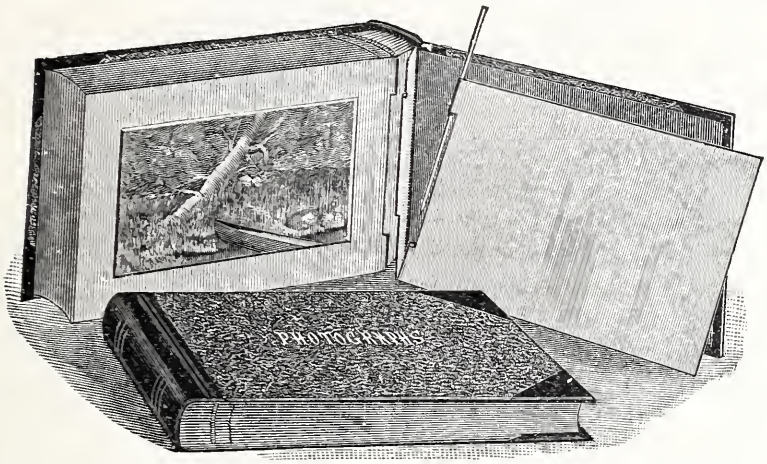
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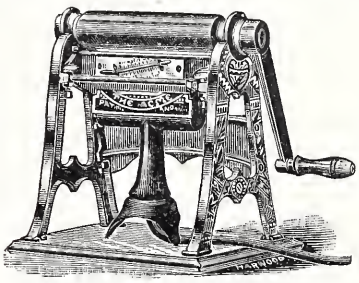
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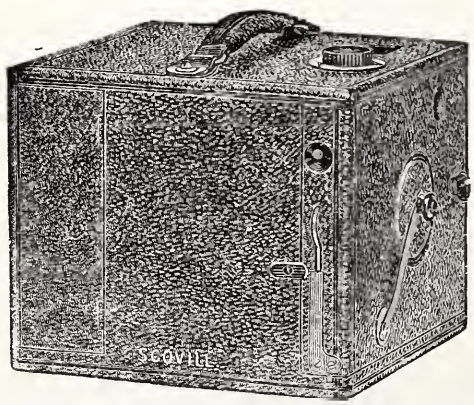
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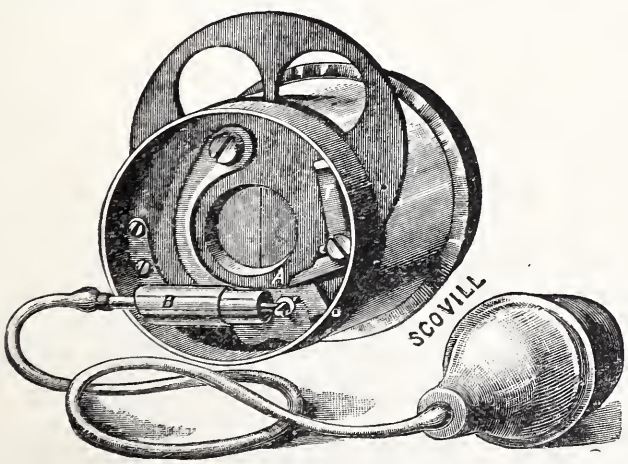
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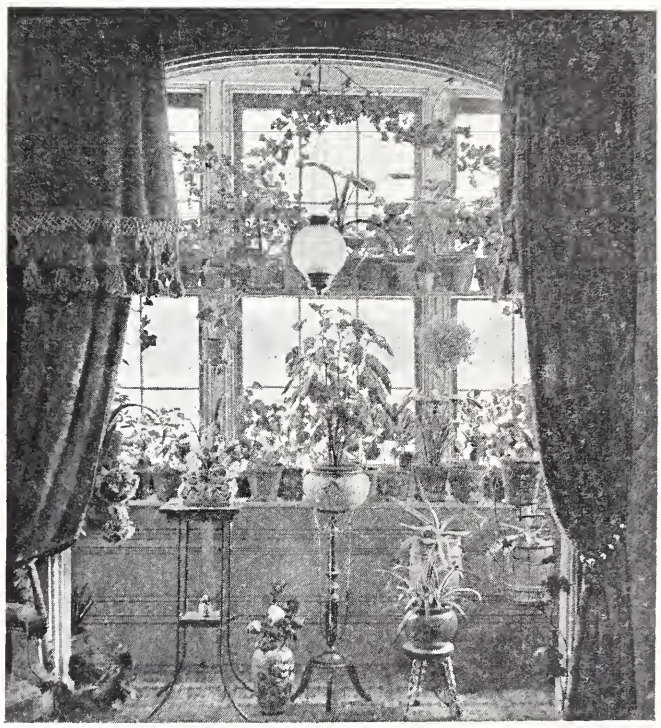
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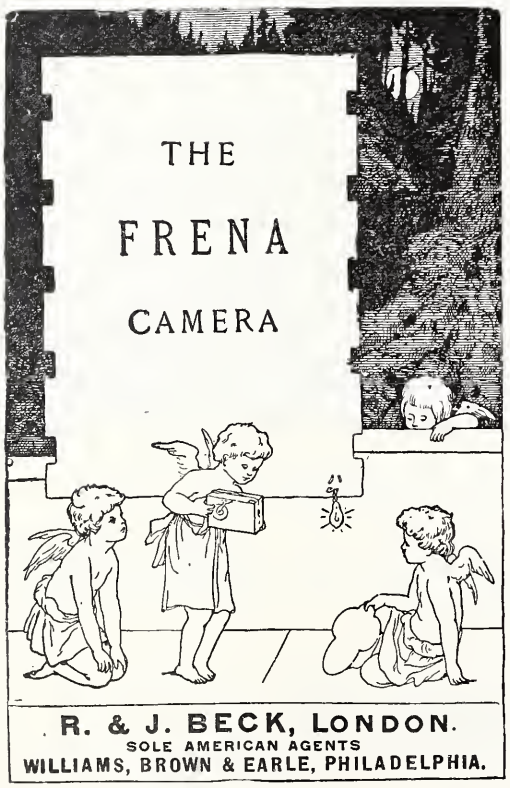
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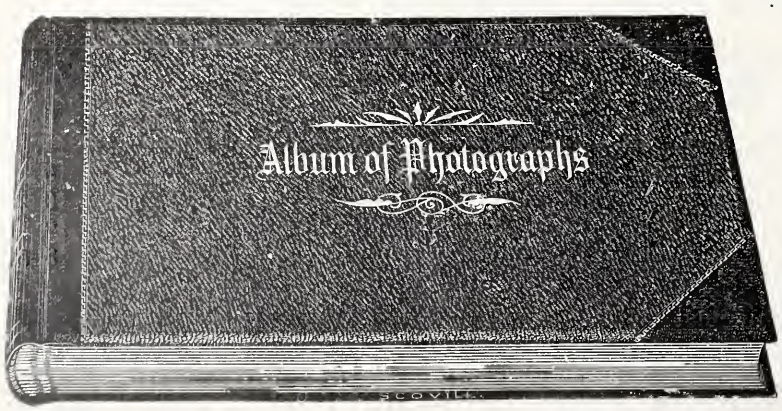
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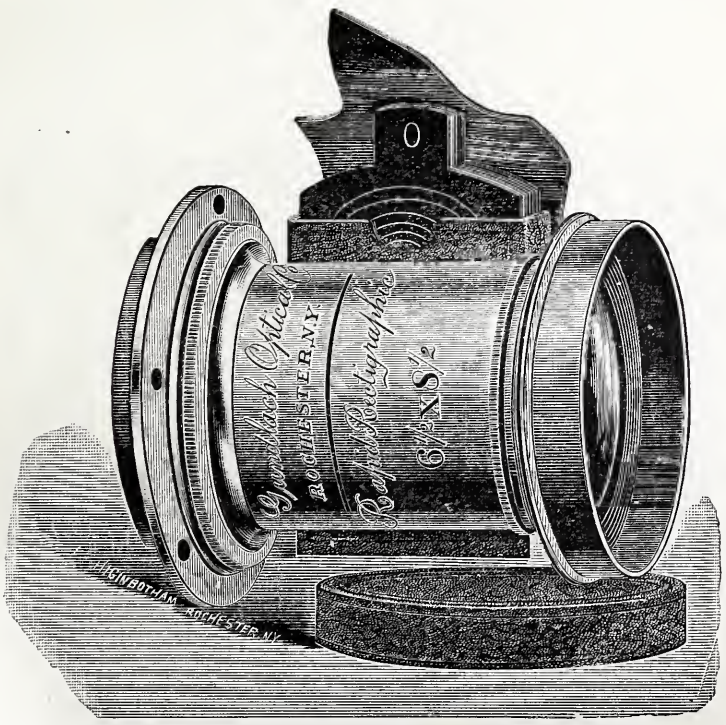
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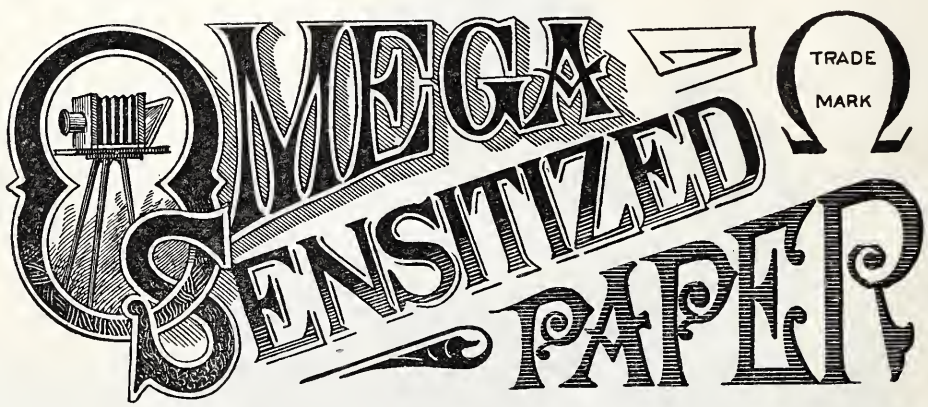
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PHOTOGRAPHIC TIMES 1A1



W.H. RICHARDSON, PHOTO

N.Y. PHOTOGRAVURE CO.

In Llewellyn Park.
(Orange N.J.)

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. MARCH 3, 1893. NO. 598.

IN LLEWELLYN PARK.

ONE of the most attractive spots within a radius of fifty miles of New York City is the Llewellyn Park on the eastern slope of the Orange Mountains in New Jersey.

Our frontispiece this week is a fairly characteristic view made in this highly favored locality. The park abounds in just such beautiful bits of natural scenery. It is largely composed of woodlands, the groves for the most part consisting of very old trees, which give an air of seclusion and dignity to the place. The dwellings also are of a picturesque kind, with few if any exceptions, and altogether the park forms a place where the lover of landscape beauty can find abundant subjects for his camera.

This particular picture is from a negative by our friend, Mr. W. H. Richardson, who has already favored our readers with an example of his artistic work with the Henry Clay camera. Mr. Richardson used a Carbutt plate and developed with Dr. Andresen's amidol.

DOUBLE COATED VS. BACKED PLATES.

AT the advent some months ago of the Sandell idea of double-coated plates we expected soon to see the veteran dry plate manufacturer, John Carbutt, as usual in the field with an American plate based on the same principal and were somewhat surprised at his unusual silence on the subject. The mystery is however at last explained and Mr. Carbutt enters the lists of photographic public opinion with his "Columbian Plate" for the prevention of halation. It seems that taking up anew the methods originated in the old collodio-bromide days and working them out in comparison with the double and triple-coated plates, he soon arrived at the conclusion that while under certain conditions of over-exposure and subsequent reduction the multi-coated plate would do what was claimed for it, yet he could get the same result under ordinary treatment and manipulation with his orthochromatic and Eclipse plates, when backed with a light absorbing medium in optical contact. This led to experiments towards finding a medium that would fill all the conditions demanded.

1st. One that would absorb all rays of light that filtered through the emulsion coating.

2d. That could be applied to the plates in the factory and have no injurious effect on the sensitive face of the plate.

3d. That when dry could not possibly form any dust or particles to injure.

4th. That plates not stain the developer or soil the fingers.

5th. That could be removed easily either during or after development.

After testing many different compositions and materials, Mr. Carbutt claims to have discovered one that will fulfil all these conditions and has named it "Carbutt's Columbian Coating."

As before observed the value of backed plates for the prevention of halation was practically demonstrated in the old days by Mr. Carbutt and others, and while its value is still recognized by advanced workers of the present, the difficulty and annoyance incidental to coating any kind of medium on the back of the modern sensitive plate in an ordinary dark-room prevents its general adoption except with a few expert workers who still continue to back their plates for special objects Taking this into consideration we think that Mr. Carbutt has wisely decided not to sell the medium, but will coat the plates before they leave his factory, thus insuring perfect workmanship and saving the operator all labor and annoyance. For the further information of those who desire to test these plates Mr. Carbutt states that any of his brands of negative plates may be obtained in this style, the box having the regular brand label on as usual while across the corner is a red slip bearing the words "Carbutt's Columbian Coating" for the prevention of halation.

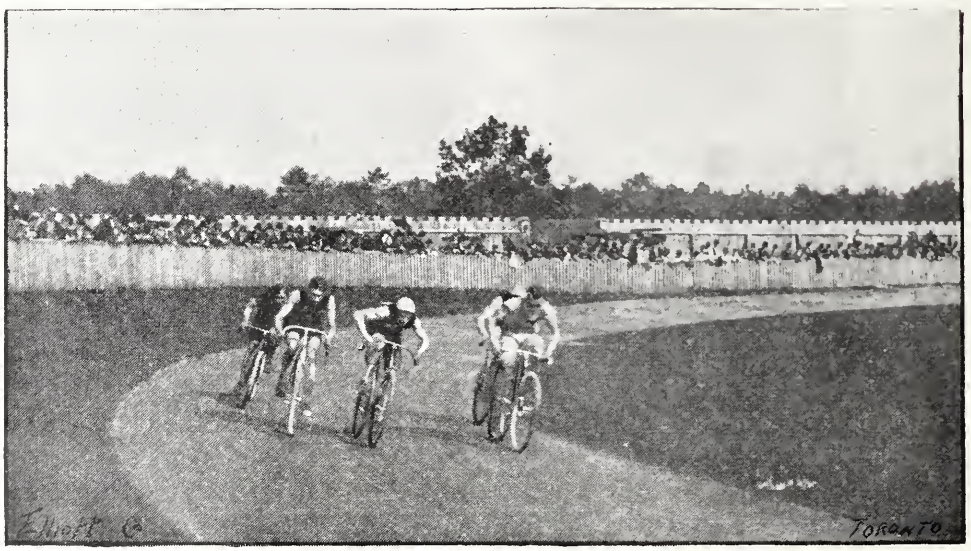
Attention is particularly called to the simple method of removing the backing: a few scores of a knife across both ways are made before the plate is placed in the developer, and when desired to examine for density, take plate out of developer, hold face down under the tap and push coating off with the fingers into the sink.

In conclusion we desire to say that we have thus fully described the Carbutt Columbian plate, for the reason that it is not based on any untried theory, but one that has the approval of most of our practical workers and actually achieves the result intended.

GOODWIN VS. EASTMAN.

THE EASTMAN COMPANY LOSES ITS CASE—A CLERGYMAN IS NOW THE OWNER OF THE CELLULOID FILM PATENT.

THE Rev. Hannibal Goodwin, recently rector of the Protestant Episcopal House of Prayer, Newark, has received word from the Patent Office at Washington that a decision has been given in his favor, in the contest with the Eastman Dry Plate Company, of Rochester, as to which is entitled to the right of a patent for the celluloid photographic film used in the kodak cameras. The suit has been pending over two years, and the result means a fortune for Mr. Goodwin, as the decision sustains him in every point. Mr. Goodwin, owing to overwork, resigned the pastorate of the House of Prayer six years ago, and began experimenting in chemistry, one of his discoveries being the film over which the contest just ended was made—*New York Tribune*, February 20, 1893.



H. English, Photo. From Canadian Photographic Journal.

QUARTER-MILE FLYING START.

WANDERERS' B. C. MEET, SEPT., 1892, ROSEDALE ATHLETIC GROUNDS.

THE OTHER SIDE.

[The following letter from the Eastman Kodak Company, dated February 22d, sets forth "the other side" of the matter. Editor of PHOTOGRAPHIC TIMES.]

ROCHESTER, Feb. 22, 1893.

Dear Sirs: You will probably receive a notification that the patent suit brought by the Rev. Hannibal Goodwin, of Newark, *vs.* the Eastman Kodak Company, to establish his patent right to the celluloid film used by the company, has just been decided in his favor.

The article as sent out is very misleading, giving the idea that this decision is final, when as a matter of fact it is merely the decision given on the preliminary hearing before the patent examiner, and is entirely unimportant.

This interference involves only one of the many patents which together control the Kodak system of film photography. The primary examiner has decided that Reichenbach was not the inventor. We still have the patent, however, and expect that the decision will be reversed by higher authorities. In case it is not and Mr. Goodwin should get his patent at some future time he would still have to establish his rights in court. But even if successful there he would not be enabled to make our film, which is covered by several other and much more broader patents. Neither would he be enabled to prevent our making transparent film, as we are able to make it without the ingredients involved in this interference.

Should you feel that the matter is of sufficient importance to demand a place in your esteemed journal, please be kind enough to present our side of the case as well as Mr. Goodwin's.

Yours truly, (Signed),

EASTMAN KODAK COMPANY.

By L. B. JONES.

MORE RECORD BREAKING.

FIRST, as to the larger picture named "Half Mile Handicap"; it should be half mile. It is one of five taken the first day, August 13th, of the big meet of

the Toronto Bicycle Club on the Rosedale track of the Athletic Association grounds I used my Laverne "Lightning" lens, 10 inch, with 24 stop and ordinary drop shutter, gauged to 200th second. View represents the riders well bunched as they turned into the home stretch after the bell had rung last lap. Nichol, of Hamilton, who is leading, was 25 feet from the camera, Zimmerman, who is making one of his world-famous spurts, about 10 feet in his rear, closely pressed by Wells, of the Wanderers, B. C., Toronto; Will Hislop, the Toronto crack rider, who finished second to Zimmie, and Campbell, the Springfield crack, and Callahan, of Buffalo, Low of Montreal, and others following. Plate, Cramer crown, was developed with eikonogen, very weak at first, gradually increasing strength as detail developed until complete, the five plates taking over four hours' patient handling before washing. This photo has attracted great attention everywhere, and has received most favorable mention from several leading authorities, as note this: "All of the riders, even those 100 yards away, are readily distinguishable, while the general effect of view of grounds, crowd, and clouds is fine." Day was cloudy and light not very strong at any time. The smaller cut is from my photo taken on same grounds, with same lens and shutter and speed, but with *f*/16 stop, owing to the lateness of the season, date being September 24th, but fine day. It is of the race of the day at the "Big Meet" of the Wanderers' Bicycle Club, of Toronto, the "quarter mile flying start," and represents men at same corner as other picture, about 30 feet from camera, at half distance home, and when they were going as the small boy said, "to beat the band." Taylor, the great crack, is leading, while directly behind, and almost hidden by him, is Wells, the Wanderers' rider and "champion of Canada"; in the middle is Will Hislop, Toronto's pride, beside him is Big Smith of the Torontos, also while Tyler is rushing up to pass the bunch, which he did in a magnificent spurt, but slipping his pedal just a few yards from tape was beaten by Taylor and Wells.



H. English, Photo. "ON THE HOMESTRETCH." From Canadian Photographic Journal.

LAST LAP—½-MILE HANDICAP, TORONTO BICYCLE CLUB, ANNUAL MEET, ROSEDALE ATHLETIC GROUNDS (250 YARDS FROM FINISH). AUGUST 13, 1892. ZIMMERMAN'S GREAT SPURT.

This picture has also commanded not a little attention, *Cycling*, the leading bicycle journal of Canada, saying of it: "We consider this the finest photo ever taken of a bicycle race, and should be of great interest to every Canadian wheelman as it shows three flyers (the pride of Canada) in hot competition with two of America's stars. The photo also gives the exact styles of the different men in a race." This plate, a Cramer Crown, on which all my bicycle pictures were taken, was also developed with eikonogen (which by the way I find best for instantaneous work as giving all detail

with no fog and plenty of density) in same way as other one sent you. My work the past summer was principally along the line of bicycling races, of which I have over a dozen equal to these, being a wheelman myself, and a member of the Toronto B. C. Naturally I was interested in taking it up and seeing what I could do in photographing the crack riders "on the home stretch." My reason for not taking the finishes being that the situation of the grounds are such that the finish is right against the sun, I therefore took all my snaps on the last turn, which I think gives even more satisfactory work to lovers of wheeling than a finish, for as a rule the crowd interferes and you cannot get scope for the work. I forgot to say plate I used in each case was 6½ x 8½. I shall be glad to give any further particulars, or answer any questions readers of The Photographic Times may ask relative to the pictures.

H. English.

TONING WITH THE METALS OF THE PLATINUM GROUP.

(*Continued from page* 96 *and concluded.*)

II.—Toning with the Metals of the Platinum Group.

Although the price of the metals of this group is very high and must necessarily restrain their use, it was interesting to research whether it was possible to obtain with them good toning solutions.

Taking as a basis the theory of toning with platinum salts, I have made a series of experiments for the purposes in question. Without entering into the description of the numerous trials I have made, and although I think that more satisfactory results can be obtained by using more suitable or better prepared salts, I will give the formulas which, so far, seem the most suitable, and describe the results I have obtained. Several of them are most interesting.

Toning with Palladium.—The double salts formed with palladious chloride and the alkaline chlorides, which I have bought already prepared, gave no results in neutral acid or alkaline solutions. One succeeds better by preparing them when wanted for use. Here is the manner of proceeding:

Take

Chloride of Palladium, pure.	1 gramme	= 15.4 grains
Chloride of sodium.....	1 gramme	= 15.4 grains
Distilled water 100	c.c.	= 3½ ounces

If the salts do not immediately dissolve and if a precipitate be formed, the liquid should be slightly heated in a porcelain dish until the solution becomes clear. One adds then 10 c.c. (2 drachms) of acetic acid and 400 c.c. (14 ounces) of distilled water. The liquid thus obtained is yellow-brown. The proofs are rapidly toned black, as in the platinum bath, but it is not possible to prevent the formation of a yellow chloropalladite of silver which tinges the proofs. This tint partly disappears in a solution of ammonia at 5 per cent.

Toning with Rhodium.—The salts of rhodium did not give good results. In a solution of

Chloride of rhodium and sodium.....	0.5 gramme	= 8 grains
Acetic acid.....	2 grammes	= 34 minims
Distilled water.....100	c.c.	= 3½ ounces

the metallic silver of the proofs slowly take a yellow, brick color which deepens still in the fixing solution. If the salt of rhodium be treated at ebullition by the neutral tartrate of sodium, the solution becomes almost colorless. The results are analogous.

Toning with Iridium.—This process presents this peculiarity that it gives violet tones similar to those obtained by the salts of gold.

The solution of the double chloride of iridium and of potassium is yellow-brown. Acidified, it tones quite well, although slowly, the proofs on paper prepared with silver chloride. When the salt is treated by the tartrate of sodium and heat, the solution takes a straw-yellow color, and if the proportion of the tartrate is not too great, the toning action progresses a little more rapidly. Here is the formula which I found the best:

Tartrate of sodium, neutral.....	0.15 gramme	= 3 grains
Chloride of iridium and potassium	1.50 gramme	= 23 grains
Water, distilled.. 100	c.c	= 3½ ounces

Boil for two minutes, then add 400 c.c. (14 ounces) of distilled water and 10 c.c. (170 minims) of acetic acid.

The proofs tone slowly in this bath, the whites remain pure and one obtains very fine, soft and pleasing purple tones.

Toning with Osmium—The salts of osmium give very remarkable results. The bath is prepared by the method above described. The first formula I have employed is the following:

Chlorosmite of ammonium .	2½ grammes	= 38½ grains
Distilled Water 50	c.c.	= 14 drachms

When dissolved, 1 litre (35 ounces) of water and 20 c.c. (340 minims) of glacial acetic acid are added. This bath acts quite regularly. I have, however, obtained better results by replacing the

chlorosmite by the yellow chloride of osmium and of ammonium of Fremy. I have selected the succinic acid to acidify the bath; I obtain softer proofs by the addition of sodium succinate, and I render the solution permanent by a small quantity of potassium chlorate. Here is exactly the formula employed:

Yellow chloride of osmium ammoniacal...	1	gramme	=15.4 grains
Chlorate of sodium ...	0.04	gramme	= 0.6 grains
Succinate of sodium...	4	grammes	=61½ grains
Water..... 1000		c.cm.	=35 ounces

This mixture keeps quite well if not prepared at a temperature higher than 50—60 deg. C. (from 112 to 140 deg. Fahr.).

This temperature is obtained without a thermometer by mixing equal parts of boiling and cold water. The above salts are immediately added, and, a few minutes after, the vial is placed in cold water to cool it rapidly.

When a proof is immersed in this bath its color is rapidly changed if it is made on plain salted paper, and more slowly when albumen paper is employed; a tint of burnt-sienna first appears; then, little by little, the half-tints of the image become of an azure-blue color similar to that of ferro-prussiate paper but inalterable by hyposulphite of soda and the diluted acids.

If the toning is allowed to proceed the tint of sienna disappears, while the blue color gradually extends to the whole image. In taking care to operate by a diffused light, the whites remain quite pure.

But if, instead of leaving the proofs in the bath until they become entirely blue, one removes them at the very moment this tint commences to appear under the ochre tone of the high-lights, one observes, when they are immersed in the fixing bath after washing, that they seem to continue to tone; the blue extends further on, and one obtains photographs having, besides the white color of the paper, two different tones, light brown in the dark parts and blue in the half-tint of the image.

Under the influence of various causes, and particularly when the bath contains mineral acids, the half tints, instead of becoming blue, appear *violet.* The contrasts are then less accentuated and the effect not as pleasing. I have ascertained that the half tints of a pure blue are regularly obtained by adding to the fixing bath some sulphite of sodium. Hence the following bath should be exclusively employed:

Hyposulphite of sodium	100	grammes	=25 drachms
Sulphite of sodium.	50	grammes	=12½ drachms
Water...	1000	c.c.	=35 ounces

By compounding the osmium toning bath with platinum one obtains a greater variety of tint. But the osmium salt being little stable in acid solution, the toning bath keeps but for a short time.

Mixture of the Toning Agents.—The toning of baths with platinum, palladium and osmium acting equally well in acid solutions, one can mix the different baths to obtain various effects.

But although this has a theoretical importance, we must say that in the actual state of our knowledge it does not seem possible to make satisfactory toning mixtures of platinum and gold, gold being entirely precipitated by the platinous salts, which are transformed into compounds to the maximum.

P. C. Duchochois.

AMIDOL.

["Some additional notes upon the Chemistry of Development, especially as regards the character of the new developer Amidol," read by Charles L. Mitchell, M.D., at the stated meeting of the Photographic Society of Philadelphia, February 8, 1893.]

In a recent lecture upon the Chemistry of development, delivered before the Photographic Society of Philadelphia, the writter had occasion to review the chemical theories of the various methods of development, and to describe, in a general way, the various phenomena attending the use of reducing agents as a means for rendering visible the latent photographic image. The "building up" of the image upon the surface of the film, which takes place during the development of a wet collodion plate, and the "etching in" of the picture which results when a film of gelatine emulsion is acted upon by a pyro-developer, were alike referred to as parts of the general scheme of development, and without any special allusion to the individual characteristics of the developer. In the general discussion which followed the lecture a member attempted to pervert the lecturer's remarks into the rather sweeping conclusion that all *acid* developers "built up" the image on the film, and all *alkaline* developers etched it in. He followed this by stating that "the latest German developers—as, for instance, amidol—were *acid* developers, *not a particle of alkali entering into their composition,* yet the same "etching was produced." Although there was nothing in the remarks of the lecturer to warrant such a conclusion, and the member was immediately set aright, these false conclusions were repeated subsequently. The author of these conclusions would seem, therefore, to be so ignorant of the common chemical theories of development as not to know that the rendering visible of the latent image on a photo-sensitive film is a

matter influenced altogether by the nature of the reducing agent employed and by the character of the film upon which it acts. Neither would it seem necessary to prove that the "building-up" action which occurs in wet-plate development is not in consequence of the use of an *acid* developer, but from entirely different causes. When development takes place on an exposed wet collodion film, although the silver haloids in the film are altered by the action of light, they are not visibly reduced by the developer usually employed —an acid solution of ferrous sulphate. This agent has no practical reducing action, under ordinary circumstances, upon the silver haloid salts. It has, however, upon the free silver nitrate existing upon the surface of the moist collodion film. This is reduced, and the reduced silver, by some peculiar action, probably electrolytic, is attracted to those portions of the silver haloids in the film which have been acted upon by light. As the source of this silver supply is practically outside of the film and on its surface, the image must necessarily be "built up." Should this free silver nitrate be removed from the film the iron developer will not act. Ferrous sulphate will also reduce the silver nitrate and deposit the reduced silver upon the film *without the presence of an acid.* In this case the reduction takes place quickly, and the reduced silver is deposited all over the surface of the film. The purpose of the acid in the developer is simply to retard and restrain the activity of the reduction and cause it to proceed more gradually, when, by selection, the deposit is attracted preferably to but certain portions of the film instead of being "built up" uniformly all over it.

Again, in the development of an exposed gelatine or collodion dry plate with alkaline pyro, the image is etched into the film, because as all the action takes place on the silver haloids contained in it, the process must necessarily proceed downwards and inwards in order to reach them. If, however, as is shown by an experiment of Captain Abney, an exposed film of emulsion be partly coated over half its surface before development, with another layer of emulsion, and then developed, the image on the doubly-coated portion will be both "etched in" and "built up," owing to the opposite directions in which the supplying sources of haloid salts exist. Furthermore, the same "etching" occurs when ferrous oxalate is used, a developer which is neither acid nor alkaline. It is, therefore, hardly necessary to allude further to this portion of our subject. The statement, however, that "the new German developers —amidol, for example—were *acid* developers, and *not a particle of alkali* entered into their composition," seemed diametrically opposed to the generally conceived views concerning these substances particularly so in the case of amidol, which is directed especially to be used only in conjuction with sodium sulphite, commercially always an *alkaline* salt. The writer, moreover, could find no support for the acid theory in any of the recent publications concerning this new developing agent, and the subject seemed an interesting one for conclusive investigation. The following experiments were, therefore, made with a view of definitely determining whether amidol was an *acid* developer; whether its reducing action would only take place in the presence of free acid; and whether the employment of an alkali was at all a necessity.

Amidol, the latest claimant for the favor of the photographic world, is stated to be a di-amidophenol, a compound radical of the glycine class. This is presented for use, combined with an acid so as to form a salt. At present it is manufactured only by two German firms—M. J. Hauff, of Feuerbach, and Dr. M. Andresen—both under letters patent. It is claimed to be far superior to all other developing agents in its rapidity of action, freedom from fog, full rendition of detail, etc.—all terms we are by this time well acquainted with—while in addition it is said to possess the property of acting freely and powerfully in the presence of sodium sulphite, without the addition of the usual alkaline accelerators. Samples of amidol were accordingly procured from the manufacturers' agents, that made by Hauff being obtained direct from Messrs. Schulze, Berge & Koechl, of New York—that of Andresen from The Scovill & Adams Company.

The amidol of Hauff was first examined. This was in the form of small acicular crystals, almost white, inodorous, and freely soluble in water. The solution in water, when tested with litmus paper, reacted strongly acid, and upon standing, shortly began to change in color, growing of a pinkish tint. until at the end of a few hours the liquid was of a deep orange-brown color similar to an old pyro solution. Three separate solutions were next made, each representing 10 grains of amidol and 4 ounces of distilled water; to these were added, respectively, 25, 50, and 100 grains of chemically pure sodium sulphite. These were set aside for observation. At the end of 24 hours they had all slightly changed and become pinkish in color; that containing the 25 grains of sodium sulphite being the most discolored. No perceptible deepening of the color was observed after this, even after several

days. This seemed to show that sodium sulphite exercised the same preservative action, owing probably to its oxygen-absorbing properties, upon solutions of amidol that it does with solutions of pyro, eikonogen, or hydrokinon.

The action of amidol as a developing agent was next tested. A sheet of Eastman's bromide paper was placed under an evenly-balanced negative, and then exposed to gaslight for 30 seconds. This was cut into four parts and treated as follows:

Experiment No. 1.

Part No. 1.—Treated with a solution of 10 grains amidol in 4 ounces water. No image appeared, even after the lapse of five minutes.

Part No. 2.—Treated with a solution of amidol 10 grains, sodium sulphite 25 grains, 4 ounces water. The image began to appear in thirty seconds.

Part No. 3.—Treated with a solution of amidol 10 grains, sodium sulphite 50 grains, 4 ounces water. The image began to appear in fifteen seconds.

Part No. 4.—Treated with a solution of amidol 10 grains, sodium sulphite 100 grains, 4 ounces water. The image began to appear in ten seconds.

These experiments showed clearly that amidol *by itself* was *not* a developer, and that the presence of other agents—in this case sodium sulphite—were necessary to start the reducing action, and that the rapidity of this action increased in proportion to the amount of sulphite present. So far these results proved nothing new, for the same facts had been previously noted by several other observers (See *American Amateur Photographer*, pages 481 and 542). The question at once arose, however, in the writer's mind, whether, as long as amidol by itself in solution had no appreciable reducing action, and that as sodium sulphite—a salt always found in the market in an alkaline condition—would bring this reduction into force in proportion to the quantity of the salt present, whether, therefore, the alkaline character of the salt was not really the cause of the reducing action, and whether, furthermore, other alkalies or feeble alkaline salts would not produce the same effect. A second series of experiments was accordingly made.

Experiment No. 2.

A sheet of bromide paper was exposed as before and divided into two parts. A solution of amidol 5 grains, water 2 ounces, was then made and this divided into two parts. These were poured at the same time upon the two portions of bromide paper in separate dishes. No action took place on the paper in either dish, and no image appeared even after five minutes. To the liquid in one dish now added in small portions of 1 dram at a time, a 5 per cent. solution of sodium carbonate in water. The liquid immediately changed color, grew darker, and with the addition of the third portion the image began slowly to appear, and development then regularly progressed. With the other portion of bromide paper no image appeared at all.

Experiment No. 3.

Another sheet of bromide paper was next taken and exposed as before and divided into four parts. These were treated as follows:

Part No. 1.—With amidol 5 grains, sodium phosphate 50 grains, water 4 ounces. Liquid changed in color to dark brown in a few minutes. Image appeared in about a minute.

Part No. 2.—With amidol 5 grains, sodium biborate 50 grains, water 4 ounces. Liquid changed to a dark purple almost immediately. Image appeared in 30 seconds.

Part No. 3.—With amidol 5 grains, sodium acetate 50 grains, water 4 ounces. Liquid changed rapidly to a light brown. Image appeared in about a minute.

Part No. 4.—With amidol 5 grains, potassium ferrocyanide 50 grains, water 4 ounces. Liquid changed dark brown rapidly, but it exerted no developing action, and the image failed to appear, even after five minutes. A dram of the 5 per cent. solution of sodium carbonate was then added to the developer, and in a minute the image began slowly to appear.

Experiment No. 4.

Another sheet of bromide paper was exposed as before and divided into two parts. A solution of amidol in water was rendered alkaline with sodium carbonate and poured on one portion of the paper. In 30 seconds the image began to appear. The developer was now poured off, acetic acid was added to it, drop by drop, until the solution tested acid, and this solution poured over the second portion of the paper. No image appeared, even after five minutes, showing that the acid had completely checked the development. Carbonate sodium was again added to the developer, and as soon as it reacted alkaline it was poured back on the paper, when in 45 seconds the image made its appearance.

Experiment No. 5.

Supplementary to this a final experiment was made on another exposed sheet of bromide paper, and this divided into two parts:

Part No. 1 received the half of a solution of amidol 10 grains, sodium sulphite 25 grains, water 4 ounces. Development began in thirty seconds.

Part No. 2 received the other half of the above solution to which had been added 1 drachm of a 5 per cent. solution of sodium carbonate. The image made its appearance in fifteen seconds, *one-half* the time.

Experiment No. 6.

An experiment was lastly made to determine, if possible, what acid was in combination with the organic base. To a solution of amidol in water was added the usual reagent test solution of silver nitrate. A copious white flocculent precipitate separated, which in a few minutes began to change to a violet shade. This when filtered off and well washed responded to all the tests for silver chloride. The aminol of Hauff is, therefore, the hydrochlorate of amidophenol, and from the quantity of silver chloride separated the salt is evidently a highly acid one.

The amidol of Andresen was next examined. Physically it was a crystalline powder of a lighter shade than that of Hauff—in fact almost white. It was much more soluble in water than the Hauff amidol, the solution did not decompose as rapidly, and its reaction was not as strongly acid. Used as a developer, *per se*, in aqueous solution, it was found after a few minutes a faint image appeared, but this gained nothing in either detail or density, even after the developer had remained on the exposed film for twenty minutes. The addition, however, of a drachm of either of the solutions of sodium carbonate or sodium sulphite previously used, immediately started development, and it then progressed steadily and rapidly to good density. Its action with the phosphate, acetate and biborate of sodium was similar to the preparation of Hauff, although the liquids changed to a greenish-black color instead of a reddish-brown. The two articles are not therefore identical in every respect. To determine the acid forming the Andresen amidol a simple solution of the latter in water was tested with barium chloride. A white precipitate was formed which responded to all the tests for barium sulphate, showing that the combination is probably a sulphate. The Hauff amidol gave no reaction with barium chloride.

The result of these experiments would lead to the conclusion that amidol is not, in any sense of the word, an *acid* developer. On the contrary, when *by itself* in solution *it fails to act*, and its acid reaction is simply a result of the method in which the diamidophenol is combined in order to insure stability. When an alkaline salt is added to partial neutralization, development commences. It increases rapidly in proportion to the quantity of the salt employed, and seems to proceed equally well with other salts than sodium sulphite. Development also occurs with the use of alkaline carbonates, and probably also with caustic alkalies, and the development is restrained by the addition of acids and accelerated by alkalies or their salts in the same manner as with the other organic alkaline developers. When sodium sulphite is employed it acts as an accelerator simply because the salt is an alkaline one. It is quickened when more sulphite is added, because the amount of alkali is increased, and this same quickening can be produced by another alkaline salt instead of the sodium sulphite. When a neutral salt is employed, as, for instance, potassium ferrocyanide, no action occurs until an alkaline salt is added. The only point in which, probably, amidol differs from either pyrogallol, eikonogen, hydrokinon, or para-amidophenol is in the fact that it is influenced by much weaker alkaline salts. There is nothing remarkable in this, for it is well known the other agents in the series vary as regards their susceptibility to alkalies, pyro, always fogging with caustic alkalies, while hydrokinon always requires them in order to obtain the best result. Sodium sulphite acts also as an accelerator with eikonogen, and it is well known that the ordinary stock solution of eikonogen and sodium sulphite will render visible the latent image. Diamidophenol is of itself an organic compound of probably extremely unstable character. To enable it to be used it must be in more permanent form, and for this reason it is placed on the market in the form of a combined salt. When exposed in solution to the action of light and air, oxygen is absorbed, the solution changes color, and the salt is decomposed. This same change takes place very rapidly, in fact immediately, with the alkalies and their weaker salts. The diamidophenol is probably also decomposed and the solution soon loses its virtue. In the case of sodium sulphite, and the reason why this salt is preferred, is because while it is alkaline enough to cause development, its oxygen-absorbing properties prevent decomposition of the amidophenol, and thus keep the solution clear and render it moderately permanent.

Before leaving the subject finally, let us look for a moment to see whether there is the least evidence of a documentary character to support the claim that amidol is acid. First, listen to what the manufacturers of amidol have to say. Hauff states in the sheet of directions which accompanies

his amidol: "No separate alkali is needed, as amidol is such an energetic reagent that the amount of *alkali* which is present in the sodium sulphite is amply sufficient to complete the reaction." And Andresen states in his directions: "Solution of *potash* (1.5) added by drops quickens development." And yet amidol is an *acid* (?) developer. Finally, the patent specifications of Julius Hauff, of Feurbach, Germany, after reciting briefly the nature and chemical constitution of the members of the "glycine" group sought to be covered by the patent, say: "These compounds are used in solution with sulphites and *carbonates* of the *alkalies*, for the purpose of developing photographic images or views." If potassium carbonate or sodium carbonate are not alkalies in the general photographic acceptation of the term, then what are they?

It remains to add a few words concerning the practical employment of amidol. The fact that the alkaline character of sodium sulphite promoted development would also lead to the supposition that it also produced a certain amount of decomposition of the amidol, and that a stock solution, made with sulphite according to the instructions of the manufacturers, would not be altogether a permanent one. That this conjecture is a true one has already been confirmed by several observers. Mr. F. C. Beach, in the January number of the *American Amateur Photographer*, states that a stock solution of amidol after standing several weeks lost two-thirds of its strength. The writer would therefore suggest that amidol be used dry and fresh in connection with a strong solution of sodium sulphite, or it be dissolved in weak sulphurous acid, either pure, or as made by the regulation formula of Cramer (Sodium sulphite, 1 dram; sulphuric acid, 15 minims; water, 6 ounces). A solution of amidol made according to the latter formula is, at this date of writing, nearly four weeks old, and yet seems as active as when first made.

As a developer, the writer has not found amidol to be any faster than the other new organic developers, and thinks all such statements are largely relative, owing to the varying quantities of accelerators and restrainers employed by different experiments. It requires the addition of a small proportion of bromide to obtain contrast, and then, although the image appears rapidly, it lacks density, and this follows quite as slowly as when eikonogen or hydrokinon are used. There seems to be, however, almost a total absence of fog, and the image when complete has good color and the image when complete has good color and full detail.

There is no doubt that the capacity of amidol as a developer, and the proper method of its use, are not as yet at all fully understood. It is undoubtedly a most potent reducing agent, and is influenced by much weaker alkaline agencies than any other organic developer yet known. With our present knowledge it therefore might well be placed at one end of the series of organic developers, as highest in sensitiveness to alkaline influences, while hydrokinon would probably stand at the other end of the list.

Correspondence.

THE PRINT INTERCHANGE.

Editor PHOTOGRAPHIC TIMES EXCHANGE SUPPLEMENT.

Dear Sir; Regarding the exchanging of prints first proposed in THE TIMES of January 13th, would say:

First.—The scheme meets with my approval most decidedly.

Second.—I want to be counted in.

Third.—I would suggest this plan for want of a better: That those desiring to exchange prints be divided into classes of not more than twelve each, and that on a stated day each month, every member of each class mail to every one in his class one 5 x 8 print (or two smaller ones) with such information regarding it as lens, stop, exposure, plate, etc., as may be decided upon. Friendly criticism may or may not be made as the class desire. I would further suggest that some member of the class be appointed President of same, and when each member mails his print to the President, he shall make a statement that he has also mailed same print to every member of his class. All failures to receive prints should be promptly reported to the President and the failure of any member to mail prints for two successive months shall result in his being dropped from the class. This will "kill off" the drones.

As "what is everybody's business is nobody's business" if this or some similar plan shall be adopted, I would suggest that you form the classes and appoint the Presidents (I am not a candidate) and thus make a start. If you thought best, we could all submit sample prints and the classes formed with regard to the grade of work. This would put you to some trouble and expense, and I for one am ready and willing to pay my share for same.

I sincerely hope that the exchange will be perfected. We have no club and few amateurs here and I am anxious to unload a portion of my ignorance on my brother amateurs.

Respectfully,

Ira F. Adams.

PARSONS, Kas., February 16, 1893.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I hope the "Print Interchange" will be established.

Will do what I can in the way of exchange to make it a success.

Would suggest monthly supplement.

Also that prints be finished except mounting.

Also accompanied by such data as time, place, and historical value (if any), size, and subject.

Also that supplement contain simply a list of "Wants." (*E. g.* I expect shortly to begin taking a series of park and landscape gardening in Los Angeles, and shall want to exchange on that line. Also a series of "Points of Special Interest to Tourists," including landmarks, natives, old buildings, cañons, etc.)

Then when a member sees what is wanted let him correspond with the advertiser direct.

Would suggest this be given six months' trial, if successful, continue it. That you be given fullest liberty in formulating rules of exchange, subject to such changes as the circumstances may in your judgment demand. As few rules and as little "red tape" as possible.

I offer the above as suggestions to be used or discarded as may seem best to those having the matter in charge.

Yours truly,

Chas. E. Gale.

418 N. Breed St., Los Angeles, Cal.

THE "COLUMBIAN" PLATE.

Mr. John Carbutt.

Dear Sir: I have given your Columbian Plates for prevention of halation a very severe test, and they have stood it well. In ordinary cases I should think they would work perfectly.

Thanking you for the opportunity to try them,

Very respectfully,

Geo. B. Wood.

February 24, 1893.

Mr. John Carbutt, Wayne Junction, Philadelphia.

Dear Sir: I have just developed the six 24 x 36 Eclipse Columbian Plates which you prepared for me, and cannot express too strongly my appreciation of the value of this Columbian Coating. These plates were all exposed in different rooms of an industrial establishment, with windows located high on both sides and end of rooms facing the camera, and although the exposures required from twenty to ninety-five minutes there is no trace of halation on the negatives; what is of great importance to the professional photographer, the exposure and developing required is the same as on the ordinary plate, and there is no difficulty in removing the backing, with the added value of no halation.

You have certainly placed a boon in the hands of the photographer whose work on interiors is often marred by intense halation.

Very truly yours,

C. H. James.

February 22, 1893.

Notes and News.

The Art Publishing Company's large frame building on Chestnut St., Gardner, Mass., was totally destroyed by fire Sunday afternoon, February 19th.

The company's loss was about $125,000; insurance, $95,000.

Albert L. Hance, fifty-two years old, residing at No. 1,603 Wallace street, Philadelphia, committed suicide yesterday by hanging himself to his bedpost. Mr. Hance met with business reverses and he recently lost his wife, and these two reasons are assigned for his suicide.—*N. Y. Herald,* Feb. 27, 1893.

E. Weiskopf, the veteran optician, died suddenly, January 8th, on the sixtieth anniversary of his birthday. Mr. Weiskopf had been in business since 1858 and was widely known among photographers. He was universally esteemed for his personal as well as scientific attainments.

The business of Mr. Weiskopf will be continued by Ottenheimer & Sons at the old stand, 232 Canal Street, New York.

An Expert Amateur's Opinion on Backed Plates.—* * * I believe most strongly in *backed plates*, having used them altogether for the past two seasons; not simply for interiors, etc., but for *all* my work, including landscape and figure studies.

They greatly increase the brilliancy and snap of a negative, and with any subject halation is practically done away with.—Robert S. Redfield, Secretary Photographic Society of Philadelphia.

Mr. George G. Rockwood, the eminent metropolitan photographer, has decided to sell his Union Square Gallery, on account of the great strain which he finds the management of two large galleries lays upon him. As the advertisement states (to which we call the attention of our readers), Mr. Rockwood is now past his sixtieth year, and quite naturally desires to lighten, rather than increase his burdens with the coming years.

The Union Square Gallery is one of the most popular in the city, and is a rare opportunity for some enterprising photographer to make a fortune. It is understood that Mr. Rockwood will sell it very reasonably. He still retains the active personal management of his uptown studio at 1440 Broadway.

Queen Victoria's liking for photographs is well known, and Her Majesty probably possesses one of the finest collections of pictures by all processes which it would be possible to get together. It is said that the most valuable New Year's present which she has received this season is the gift of the German Emperor and Empress. It is a magnificent album, bound in morocco and clasped with gold, containing between thirty and forty very large photographs of the exterior and interior of the famous Schlosskirche of Wittenberg, the reopening of which building last autumn, after a thorough restoration, was attended by the Duke of York. This album has been added to the Queen's private collection at Osborne.—*The Photo News.*

The Chicago Camera Club was entertained at the Recital Hall, Auditorium, on Saturday evening, February 18th, by Mr. Otis A. Poole, who gave a most entertaining lantern talk upon things Japanese, entitled "One Day in Yokohama." Mr. Poole has long been a resident of Yokohama, the chief treaty port of the Mikado's Empire, and has unusual photographic opportunities which he has improved to the fullest extent. His views, from Kodak negatives, are unique and of excellent quality. They show

bits of Japanese life caught by the happiest of chances, either in the narrow, busy thoroughfares of Yokohama, or in the tea and rice fields just outside of the city. His studies of tiny Japs at play and his "Shaving the Baby's Head, Before and After," were hilariously received.

A good story or an interesting bit of information went with every slide, and although Mr. Poole has had but little experience on that platform he made every point tell, and won the immediate favor of his listeners by his natural humor, while his thorough familiarity with his subject enabled him to tell them many new and entertaining things about the country and the people of Japan.

Portraits Sent by Electric Cable.—Mr. Francis Galton, lecturing at the Royal Institution, explained some experiments he had been making on the subject of pictorial telegraphy. He had experimented with the profile of a Greek girl and found, by a form of letters and dots, this picture could be telegraphed from America for £8. For this purpose he had taken a paper *fac-simile* of a mariner's compass, using only the alternate points. Against each of the sixteen points he placed a letter running from A to P. With these almost any number of outlines could be formed, and when the letters had been transmitted, the only thing to be done to reproduce the pictures was to take the paper compass, which he called the protractor, hold it against a piece of paper, and prick dots against the letters. He had also been able to produce a map of England by this method. Of course the whole thirty-two points of the compass could be used, giving scope for more complicated drawings. Dots did not give continuous lines, but when the dots were small the difference was very slight. For instance, 300 dots to the inch appeared to the naked eye as a continuous line at a distance of only a foot. There was just a perceptible difference of optical continuity, and his experiments showed that this slight difference had given us a new power that had practicable bearings, for undoubtedly it would be found of great use to be able to transmit pictorial descriptions of events in distant parts of the world by telegraph.—*Pall Mall Gazette.*

PHOTOGRAPHY VS. WOOD ENGRAVING.

Americans will be the first to reject the flattering suggestion that they have killed or could kill wood engraving. If changes have taken place in methods of engraving, it is not the American engraver, but photography that must bear the blame or the praise. Since the perfection of photography the champions of wood engravers who insist on putting a great deal of themselves into the reproduction in black and white of a painting or other work of art have been forced to shoulder the burden of proof. Why, they are asked, should the translator trust between the original artist and the public more or less of his own individuality? Why should it be considered artistic in an engraver to to take the work of an original mind and in the process of placing it by many duplications before the world deprive the artist of a portion of his own? Photography has the merit of opening the eyes of the public to the fact that the so-called "artistic" engravers only existed at all because artists could not help themselves, and that while they were posing as translators they were in most instances traducers.

The champion of the old-time engraver is in the dilemma of asking of that person a faithful reproduction of a picture in black and white, but at the same time of offering him a premium to make the reproduction unfaithful. For unfaithful it must be, if during the transition a portion of the original creation is elbowed out, to make room for the some of the engraver's creation. Without question it seems hard to an engraver who has reaped some glory through the unfaithfulness of his renderings to be told that nowadays artist and public will hold him more strictly to account, at pains of seeing photographs of the object engraved preferred to his combination. No one blamed Mr. W. J. Linton, for example, when he wrote a lively little book defending the time-honored view of a matter which is now out of date; the less was he blamed, because his attacks on his critics and the new school were amusing. But it is another matter when a writer, professing to be an authority and a teacher in things artistic, returns to these by-gone fallacies and proves himself oblivious of what is happening in art about the world, because in a city and an atmosphere which by the wildest stretch of words cannot be called artistic, the public has not learned to demand a better quality of engraving than it suits publishers to give. Such wood-cuts as he would like the British public to continue admiring can be had at prices American engravers decline to consider.—*N. Y. Times, Feb.* 19.

PHOTOGRAPHING THE "VESUVIUS" SHELLS.

As for the photographer, he knows that after waiting perhaps an hour for his opportunity it will last at most no more than one-ninth of a second when it does come. In that brief space of time he must think and act quickly if he hopes to work the shutter while the projectile is in the field. No wonder he becomes anxious and snaps off before the sitter has arrived through fear of being too late; or, overcome with a sort of buck fever at the sight of the on-coming whistling, black cylinder, he lets the instant pass unfruitful. This may explain why in many opportunities so few good shots are obtained. Even when the observer feels that he has been successful it not infrequently occurs that the ugly looking smudge so highly prized will not show up in the development. In one instance, strange to say, a stately three masted schooner came out just where he would have sworn an 8-foot projectile should have been. The projectile had probably passed before the exposure was made, and a fair picture was taken of an unobserved schooner on the opposite side of the river.

Still there are advantages in this style of photography, the projectile cannot complain and those most interested in its behavior and appearance at the instant of impact care little for cloud effects or detail. What they want is the angle of inclination of the axis of the projectile. That angle is the main condition upon which depends the method of exploding the shell. Should the projectile maintain its original inclination as when discharged from the gun, the centre of gravity merely following the trajectory, it is apparent that a very different fuse would be required from the one needed when it strikes nose first. Again, should the projectile strike at too slight an inclination a nose percussion fuse could not be depended upon.

The Importance of This Work.

The length of dangerous space in which the projectile rushes through or skips over the water after impact and

before it comes to rest is also affected by the inclination of the axis of the projectile. In fact, all the data that can be obtained as to the behavior of the projectile throughout its flight are of importance to those who have to decide upon its merits and defects.

So long as the regularity of flight had not been demonstrated it was necessary to take precautions to avoid a possible erratic shot. The camera was therefore mounted a short distance from the line of flight at the end of the range, the observer taking his place 500 feet further back. The shutter exposing the plate was worked by means of an electro-magnet which tripped the detaining trigger upon the observer completing an electric circuit. Later it was found that the projectiles as a rule held their line of flight very closely, the only deviations being in the range, and as a consequence the electrical outfit was discarded, and the observer moved up to within sixty yards of the line of flight, anchoring in a launch opposite the different ranges.

The projectile moves over a horizontal space of one sea mile or six thousand feet in about eleven seconds. The actual distance travelled over the lofty trajectory is much more, so that its velocity at the end of flight is presumably about six hundred feet a second, or about sixteen times as fast as Nancy Hanks breaking the record. To photograph an object eight feet long and ten inches in diameter, moving at this speed, is no extraordinary achievement, providing one knows where the object will be at a certain time. It is then merely a matter of speed of shutter and sensitiveness of plate. Dealing in such small spaces of time as one-ninth of a second, however it is necessary to consider the time taken by the shutter to obey the impulse of the spring after the circuit of the electro-magnet is made or the pneumatic bulb is pressed.

LIEUTENANT KNIGHT'S PLAN.

An ingenious method of doing this was suggested by Lieutenant Austin M. Knight, one of the most expert photographers in the navy, who has devised several apparatus for photographing minute defects in inaccessible parts of the bores of high power rifles. His plan was to drop a ball from aloft, having the camera focused so as to cover the path. At the instant the ball reached a certain point the shutter was worked. The plate was then developed and the ball was found to be some distance below the marked point. The difference between the time required to fall from the starting point to the two other positions was, of course, the time required to start the shutter. Knowing the distances, this was easily worked out by the law of falling bodies.

Small bullets have been photographed flying at three times the speed of the dynamite projectiles, and Major Randolph, of the Fifth artillery, succeeded in obtaining excellent views of the dynamite projectile as it was leaving the muzzle of the gun. The first case was by far the easiest. The bullet was made to pierce tinfoil electrodes of a Leyden jar in such a manner to produce a spark of sufficient intensity to photograph the bullet on the plate of a camera focused on that point.

In all such cases, however, the exact position of the projectile at a certain instant was known, and it was necessary only to focus the camera on that point, determine the time required to release the shutter, and, by easily-devised mechanical arrangements, the gun might be discharged and the shutter actuated at the same instant.—*New York Herald.*

PERPLEXING.

"You know Miss Flyer, the actress? She comes here and poses regularly, and though I deliver the photographs to her she never says anything about payment, though I think she's good for the money. The matter puzzles me."

"I see, she's a regular poser to you in more senses than one."

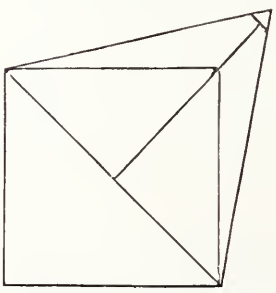
Queries and Answers.

36 E. R KNOWLES.—1. Will you kindly give me some information in your correspondence column in THE PHOTOGRAPHIC TIMES as to the correct position of the diaphragm for a single lens? I am aware that it should be placed in front of the lens, but is there any rule for the exact distance that it should be placed in front of the lens, and the size of the opening, if it is a fixed diaphragm? I have a 4" double-convex lens which I desire to diaphragm in this way, and would like to know where the diaphragm should be placed to get the best results.

2. Is there any work published on said lens and diaphragm which goes thoroughly and carefully into this subject? If so let me know the name of the same.

36 *Answer.*—1. Upon the diagonal of the square of the focal length of the lens and in its centre erect a perpendicular also the length of the focus. Draw on its apex and centred a line representing the diameter of the lens.

Lines drawn from the ends of the diagonal and touching those of the line representing the lens will meet at a point beyond it. It is here where the diaphragm is to be placed. You should have at least three diaphragms, *f*/15, *f*/25, *f*/35.



2. W. K. Burton and J. Traill Taylor in their respective works on photographic optics speak on the subject.

37 WOLVERINE.—What is the cause of my albumen prints being so yellow. They turn so at once. I cannot account for it, my paper is *three crown*, and the *modus operandi* has not been changed.

37 *Answer.*—Several causes will produce yellowness, such as having the prints left too long in the hypo bath, or when that bath is acid, or it has been used several times. Extreme heat or sultry weather, or when the paper has been silvered too long before printing, will tend to make the paper yellow. The three crown paper is all right, we assure you.

38 M. M. M.—Where can I obtain pelletones, or pyrogallic acid compressed into pellets?

38 *Answer.*—The Scovill and Adams Co. have an abundant and freshly prepared supply.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

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W. I. LINCOLN ADAMS, Editor.

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One page, each insertion $25 00
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Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

SOLD OUT! SOLD OUT!

THE publishers of "The American Annual of Photography and Photographic Times Almanac" for 1893, beg to announce that the entire edition consisting of over 18,000 copies has been exhausted, and that they are unable to fill further trade orders.

They offer to announce in these columns without charge, the name and address of any dealer who may still have a few copies for sale. They request that such dealers will kindly notify them at once, as they are constantly receiving requests for the "Annuals" which they cannot fill and they wish so far as possible to facilitate the means by which every one who desires a copy of the book may obtain it.

WHERE YOU CAN OBTAIN THE AMERICAN ANNUAL.

W. D. Gatchell, agent, photographic materials, at 343 W. Jefferson St., Louisville, Ky., reports a small number of The American Annuals for 1893 still in stock.

Frank N. Blake, of North Adams, Mass., announces that he has ten (10) copies in paper covers still unsold.

The Geneva Optical Company, 67 Washington St., Chicago, writes that "a few copies still remain unsold on our shelves. * * * There is but one opinion expressed as to the book itself—'Unequalled and indispensible.'"

Vallentine & Dickerson, 637 Broad St., Newark, N. J., report that they have seven copies remaining of "The American Annual of Photography and Photographic Times Almanac for 1893."

Geo. J. Wolf & Co., 918 Arch St., Philadelphia, report some unsold copies in paper covers.

Butts & Adams.—"The modern and progressive" photographic stock house at 457 and 459 Washington Street, Buffalo, N. Y., report that they have a few of the '93 Annuals for sale, both in paper and cloth.

Messrs. E. M. Newcomb & Co., dealers in photographic apparatus and supplies, at 69 West 36th Street, New York City, write in regard to "The Annual" as follows:

"We have copies of '88, '90, '91, '92 and '93 Annuals, paper and cloth, and will sell them at the list price until exhausted. We have one copy of the Edition de Luxe, 1889, at $25.

"Newcomb broke his right arm one week ago and is just around. Hopes you can read this. He feels that it is lucky for him that he is fairly ambidextrous.

"J. A. Vanderpoel, of our firm, is on the Inaugural Reception Committee at Washington."

THE NEW BOOK BY MR. ROBINSON.

"Picture-Making in the Studio by Photography," by H. P. Robinson, offers good suggestions about the choice of subject and accessories, lighting, posing, and other matters of interest to the 'artist-photographer.'"—*The Critic.*

"Picture Making in the Studio by Photography," by H. P. Robinson. This work is by a popular author, and will become a popular book. It is a well-written and interesting address to photographers on the subject of the title.—*Canadian Photographic Journal.*

"Picture-Making in the Studio by Photography," is a work from the pen of a noted author on photography, Mr. H. P. Robinson. The work is elegantly printed, as is usual, by the above publishing house (The Scovill & Adams Co.). This work will interest all who read it."—*The Eye.*

The Chemistry of Photography, by W. Jerome Harrison, has just been published by The Scovill & Adams Company, and more than justifies the expectations aroused by its announcement some months ago. The work commences with an able outline of the theory of general chemistry, following which are several chapters devoted to a description of the characteristics and properties of the various chemicals employed in photography; next we are given explanations of the theories of photography, development, both in wet and dry processes, and orthochromatic photography. All of the different printing processes are explained in detail, as well as the different methods of reducing, intensifying, fixing, and many other processes also receive full attention. The work is most complete and valuable, and should be added to the library of every photographer; indeed, in the hands of an intelligent worker it is a library in itself.—*The Photo-American.*

The Henry Clay.—"I am satisfied that the Henry Clay is the best camera yet made," writes B. W. Kilburn, of Littleton, N. H., The World's Fair (Stereoscopic) Photographer.

TRY DR. ANDRESEN'S AMIDOL DEVELOPER.

Business Notices.

A WELL KNOWN GALLERY FOR SALE.—Owing to the large increase of business in my uptown establishment, I find myself (now past 60 years of age) obliged to confine my strength and attention to my new venture, and shall, therefore, dispose of the Union Square Photographic Gallery, where I have done an admirable business for about fifteen years, the receipts varying from $25,000 to $33,000 per year. Any skilled and progressive photographer can equal or surpass these figures. It is perfectly fitted with Dallmeyer lenses, etc. An operating room 60 x 30 feet, enormous and very quick north skylight, ample printing space, and everything for a large business. It is situated in the very heart of the retail trade and favorable for either a club or refined business. Price and terms will be reasonable.

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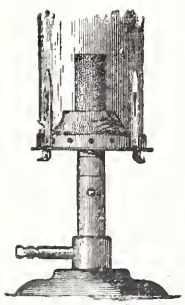
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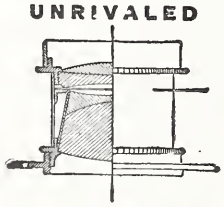
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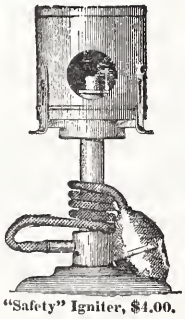
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Vol. XVIII., 1888, - - - - 3

THE PHOTOGRAPHIC TIMES
PUBLISHING ASSOCIATION.

ESTABLISHED 1865.

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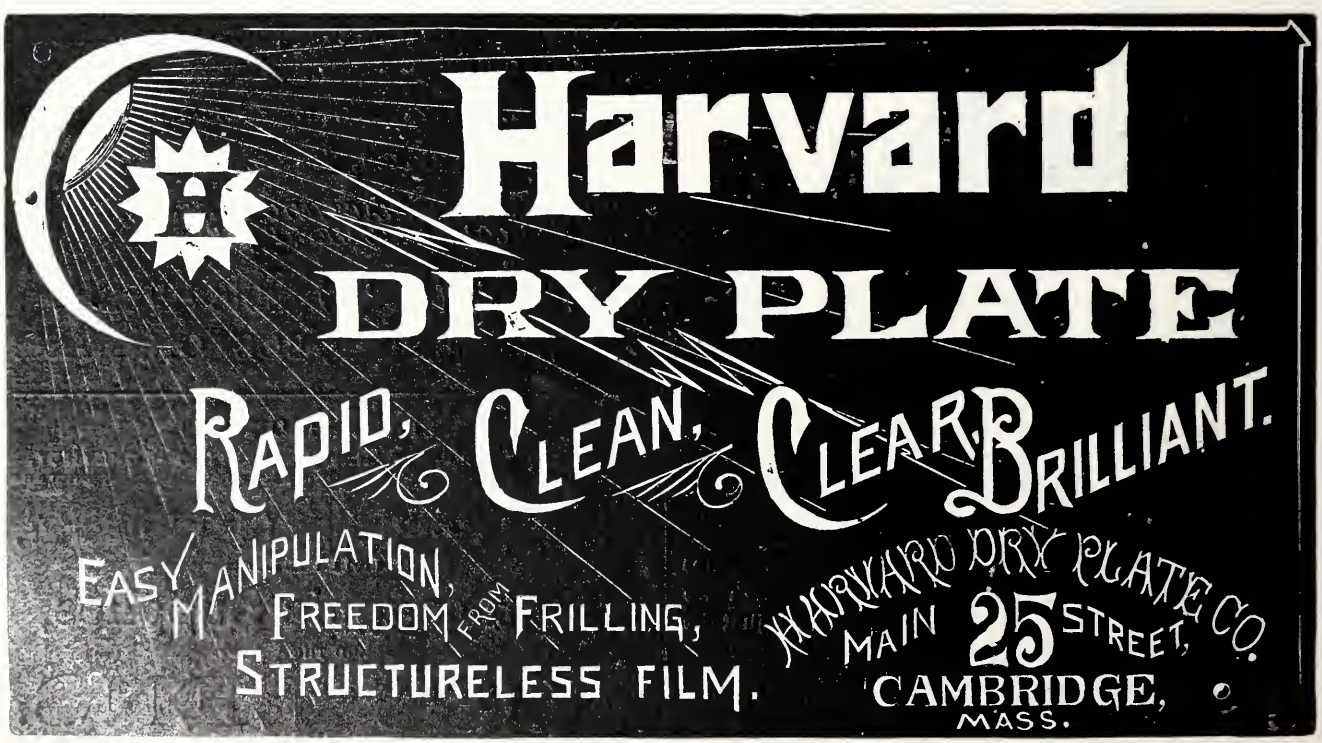
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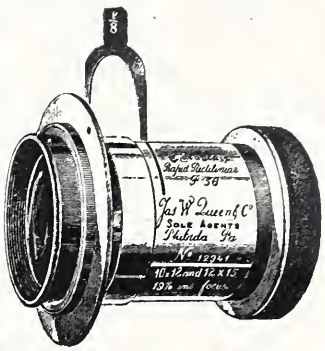
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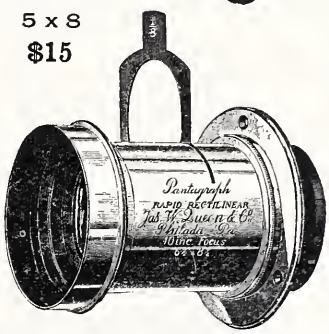
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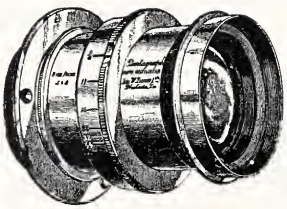
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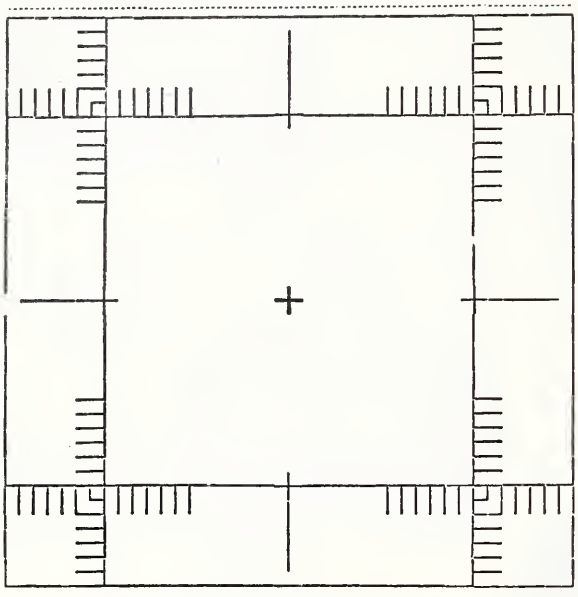
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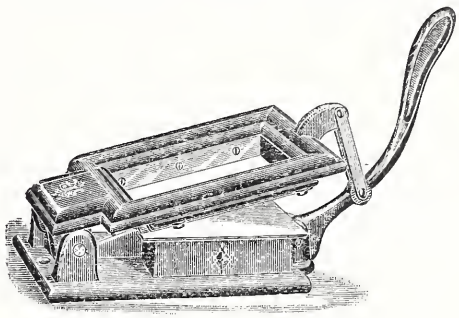
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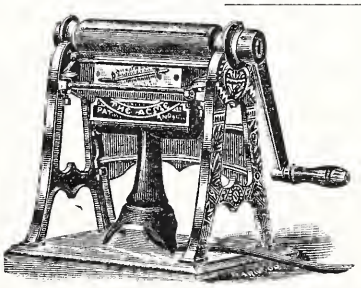
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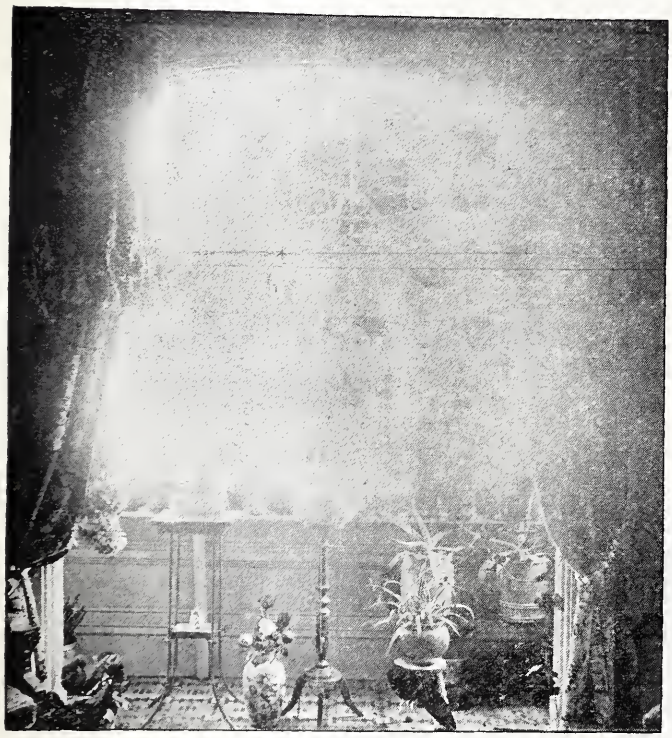
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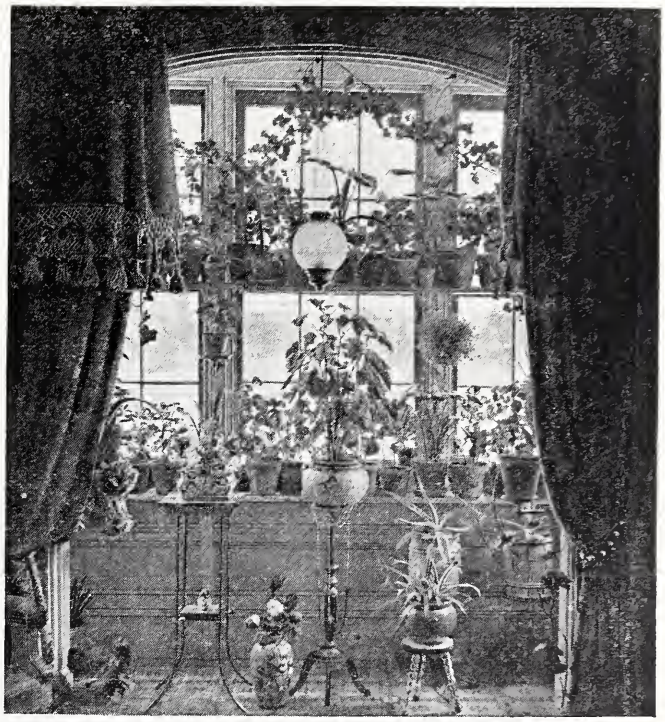
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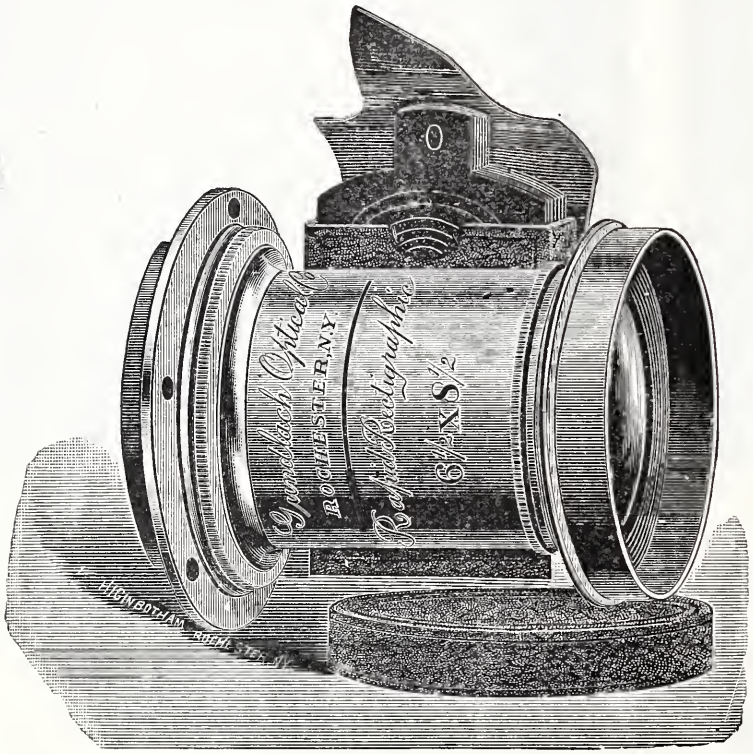
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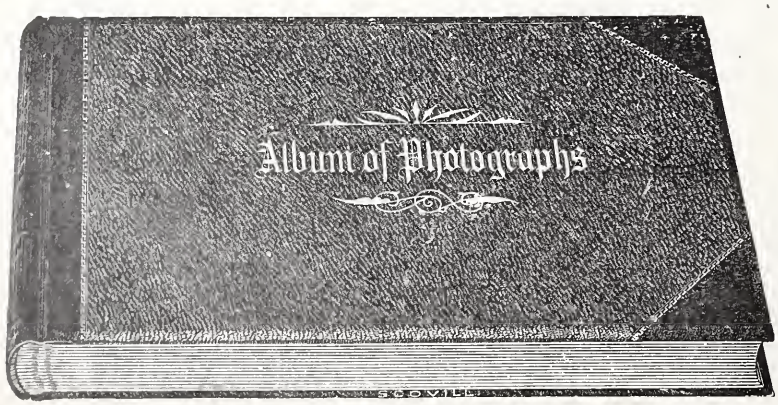
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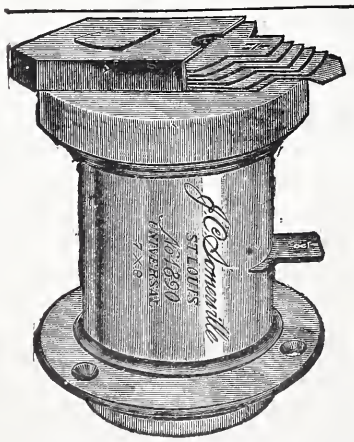
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HAVE YOU SEEN IT?

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TULIPS.

Mrs. D. M. Stevenson, Photo. F. Gutekunst, Engraver.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. MARCH 10, 1893. NO. 599.

TULIPS.

OUR frontispiece this week is from a negative by Mrs. D. M. Stevenson, the well-known amateur photographer of Chicago.

In the article which follows something is said concerning Mrs. Stevenson's method of work, so that it only remains here to state that the negative was made on a Carbutt orthochromatic plate (sensitometer No. 23) without the use of a color screen. A No. 2 Voightlander Euryscope was used with stop *f*/ 32. The time of exposure was 30 seconds; development was accomplished with eikonogen and hydrochinon combined.

A NOTED LADY AMATEUR.

WE take great pleasure in presenting herewith the portrait of Mrs. D. M. Stevenson, who is the author of the excellent photograph which appears as our frontispiece this week.



Mrs. Stevenson was the first woman in Chicago to do anything in amateur photography. This was about 1881, and she has excelled in her photographic work from the first. She was President of the Woman's Photographic Club, and when that organization consolidated with the Chicago Camera Club, she became one of the Vice-Presidents of the larger organization and a member of the Executive Committee. She is Vice-Chairman of the Woman's Committee of the Congress of Photographers of the World's Congress to be held next August in connection with the World's Fair at Chicago, and is active and prominent in everything that stimulates photographic work.

Mrs. Stevenson made an extended tour through Europe with a $4\frac{1}{4} \times 6\frac{1}{2}$ "Star" View Camera, made especially for her by The Scovill & Adams Co., and brought home a rare collection of photographs. A trip to California of some three months' duration resulted in a hundred fine negatives of the varied scenery and flowers of the Pacific Coast. She has of late made a special study of flowers and other ideal subjects for book illustrations. The frontispiece of this number is a fair example of Mrs. Stevenson's work in this direction.

Though Mrs. Stevenson is a very busy woman, having the care of a large house, where she entertains a host of friends, and the education of two promising sons, she yet finds time to use her camera very frequently, and does all her own darkroom work and printing.

Mrs. Stevenson is especially proficient in printing on plain silver paper, and our portrait, which is an excellent likeness, was reproduced from a plain silver print made by Mrs. Stevenson.

E. HACKH'S "NATURAL" PHOTOGRAPHY.

UNDER the above title a method has become known in Berlin, and Germany generally, by which portraits are taken in natural size, in a small fraction, one-fiftieth of a second, and by magnesium flash-light and daylight combined. The flash-light plays the principal and, photograpically speaking, the only active part. Daylight is admitted merely

to reduce the glare of the flash and make its effect upon the eye of the subject less painful.

According to the description of the method and apparatus, taken from *Deutsche Photographen Zeitung*, a reflector of parabaloid form and of white material is at a height of about 8 feet attached to floor and ceiling and inclined a few degrees.

At the base the parabola is about 4½ feet in diameter, and at its apex is fastened exactly in the centre and opposite the opening, a magnesium flash-light cartridge. The axis of this reflector forms with the floor an angle of about 30 degrees, and if elongated would meet exactly with the head of the subject to be photographed. On each side of the reflector are two white screens, and other but movable screens on the floor, close the space where the photograph is to be taken. The day-light in this, so to say elongated parabola, is so extremely weak that it cannot be a factor or aid in obtaining impressions by instantaneous exposure. The screens assist to concentrate the flash-light, to lead it into one direction, not to be diffused throughout space, and serves at the same time to brighten up deep shadows, and to harmonize the illumination of the subject.

The camera erected on the outside of the screens, points the objective through an aperture towards the subject, not necessarily in right angles with the axis of the parabaloid, but somewhat inclined towards the position of the source of light.

After the combustion of the magnesium flash-light compound, a large volume of smoke arises, and the product of the consumed metal, *magnesia*, floats about and settles finally upon subject and surroundings. A great annoyance which Dr. Stolze has abrogated at the instant of this particular method, by placing immediately before the cartridge a thread, connected with a cover to fit snugly upon the opening of the base of the parabola. Igniting the cartridge, its contents combusting burn up the thread, and suddenly the cover closes up at the same instant. This is indeed a huge instantaneous shutter, but it serves its purpose well, not only as a shutter but also to make harmless the combustion products of the powder, for they remain within the reflector, settle down, and become harmless within a very short time.

To permit of accurate focusing the head of the sitter is illumined by the flame of a large petroleum lamp with cone and reflector. The camera admits plates of 28 x 34 inches in dimension, plate-holders are comparatively of light weight and easily to be handled. The objective used is a single achromatic landscape lens, but instead of it might be used to advantage the reversed anterior lens of a portrait combination of suitable power.

To avoid fogging of the plate by undue light entering, a system of diaphragms is attached before the objective and behind it, within and without the camera.

Focus being taken, a small screen or back-ground, say of 40 inches square, is placed behind the sitter; plate-holder inverted, slide drawn, and with a simultaneous touch upon a button, the electric circuit is closed, the cartridge ignited, the thread before it consumed, and the aperture closed. The exposure is made within one-fiftieth of a second.

In comparing Hackh's method with others by magnesium flash-light we notice at once the advantages offered by it. With a little experience in the handling of the apparatus there is more certainty in the result, than by any other we know of; distance and quantity of the flash-light powder are always the same, but what is of the most importance no light is diffused through space, none of it is lost. By the arrangements made it is led always in the one direction, and in uniformly the same manner illumines the subject before it.

By any other means it would be quite impossible to take a life-size portrait with a single lens and in the small fraction of a second.

A Hackh portrait simple and pure, no matter how excellent the likeness, or how well executed in technical respects, will not, we suppose, be much admired by the dear public. The picture must be retouched, smoothed down, equalized, and all that done to it generally demanded by the patrons of our ateliers, but were a skilful retoucher who understands well how to treat the face, and who is experienced in the handling of pencil and brush to undertake retouching of it in the generally accepted style, the cost of doing so would be excessive and the possible benefits to be derived from the instantaneous exposure be entirely annulled.

The ordinary method of retouching is not applicable to this style of portraits, and should be employed only to make corrections here and there or to reduce irregularities to a mininum.

The glass side of the negative coated with mat-surface varnish and then retouched upon with broad strokes of the brush, to reduce undue intensity of shadows, and to harmonize effects generally is the only method to make these portraits a source of profit to the practitioner. Print from these negatives upon platinum paper, and add a few telling touches or washes with brush or crayon,

and the Hackh picture may become the acme of photographic portraiture.

Artists of renown have pronounced in favor of these pictures, and why should they not? Are they not true representations of the subject photographed, and do they not give us a perfect copy of all the details of the original that sat before the camera?

OBITUARY.

John H. Hallenbeck.

It is with real sorrow that we record the death of John H. Hallenbeck, which occurred Thursday afternoon at 5 o'clock, March 2, 1893.

Mr. Hallenbeck was one of the oldest, if not the oldest photographer in the United States, he having served an apprenticeship with the Mead Bros., of Albany, N. Y., who were the first to practise the new art of daguerreotypy in this country. He has been connected with photography in some capacity ever since, in later years having been in the employment of The Scovill & Adams Company, where he was much esteemed. In 1860 he was with Clark & Remington, of Memphis, Tenn. Mr. Hallenbeck was a good practical photographer, being familiar with all the processes in vogue at different times from the daguerreotype to the dry plate. He was especially well versed in the older processes connected with the collodion wet plate and was a frequent contributor to the photographic periodicals of the time when these processes were most used over his own name, and the *nom de plume* of "Vox." In later years he found little time in which to contribute to photographic literature the practical articles he was so well qualified to write.

The immediate cause of his death was Bright's disease and he had been ill but a few weeks. His funeral occurred Friday evening at eight o'clock, at his residence, No. 231 West 15th Street, City, and was attended by a large delegation of his business associates in the employment of The Scovill & Adams Company, headed by the President of the Company. He leaves a widow and one daughter, Miss Jessamine Hallenbeek, the well-known soprano singer.

A PRACTICAL NOTE ON BROMIDE PRINTING.

The following hint is addressed to those inexperienced in the use of bromide paper. In few branches of our art and its practice do we find the need and value of actual experience so valuable as in the timing, etc., of exposures for bromide papers. The hint represents the evolved experience of the writer, who had no "friend in need" to suggest or guide, and such may be, presumably, the position of other amateurs. It is to amateurs that the suggestion is tendered, and for the following reason: The professional worker is in constant practice, soon acquires a stock of experience sufficient for the purpose, and often requires to take a dozen or more prints from one and the same negative. Should the first or second be slightly at fault, the third ought to be correctly timed, and the loss of one or two pieces of paper per dozen is no serious matter. The amateur, on the other hand, usually uses the bromide papers at irregular intervals, and, still more to our present purpose, and seldom needs to make more than one or two (or possibly three) prints from any one negative. To spoil, say, two pieces of paper in order to get one satisfactory print soon makes the process a costly one. Furthermore, having hit upon a correct exposure for negative A, this is little help towards that best adapted for negative B.

The first step is to fix upon some light which shall be (as near as may be) constant. I find a No. 5 Bray's (gas) burner *practically* constant. It is, however, advisable, I think, to *very loosely* pack the inside of the burner with a small ball of cotton wall. This seems to tend towards equalizing the slight variations of gas pressure in the supply pipes. Next a small (half-plate is convenient size) negative is selected as a "*standard negative.*" This should show a good long range of densities from clear glass to moderate opacity. An ordinary landscape with some foreground object cottage, distance, and if possible a slight indication of clouds, or such a negative as may usually be found among shipping and sea-side studies.

We now take a piece of stout string, and mark it with a knot at intervals of 6 inches, *i.e.*, half feet, beginning from 1 ft., 1½ ft., 2 ft., 2½ ft., and so on up to 6 feet at least. It is a safe precaution to make a double knot for the whole feet and a single one for the half feet. It now only remains to discover the exposure of our standard negative. In order to do this I strongly recommend the employment of a fairly thin sheet of white pot opal glass, large enough to cover the face of the printing frame. Its use is twofold. Firstly, it helps greatly to diffuse and equalize the gas light. The second one I will point out below.

We now take our standard negative, place it in contact with the opal glass through which we are presently to print. Holding the two together *at arm's length* (if your sight is fairly good, but in

any case endeavor always to maintain the same distance from eye to negative), now look all over (*i.e.*, through) your negative. Try the effect of approaching only to and receding from the illuminant. Trial will presently show you that distance at which you seem to get the best value out of the negative—the point where the delicacy and detail of shadow is shown—while the light is not too strong to prevent the highest light remaining bright and pure. Your string scale has already been fastened by one end to the gas pipe a few inches below the burner. You now have a ready means of measuring the distance at which you found a satisfactory illumination. Les us for example say, this is 3 feet. This is about right for a slightly over-dense negative ; we now turn down the gas to the "blue."

Put negative and paper in printing frame. (N. B. —The paper curls with the coated side inwards.) The opal glass is laid over the face of the printing frame. With one hand the string at the sixth knot (3 feet) is held, and also the printing frame with the opal glass as a diffusing screen. With the other hand the gas is turned "full on" for say 10 seconds, and then again turned down to the "blue." Now cover up half the face of the trial negative with something opaque (*e.g.*, a piece of cardboard), replace opal glass, and give a second exposure to say 10 seconds. We have now a piece of paper one-half of which has had 10 seconds exposure, the other 10 + 10, *i.e.*, 20 seconds exposure. Proceed to develop this. The result will show the direction in which the second experiment must be made. Let us suppose that 10 seconds is undoubtedly too short, and you are somewhat doubtful about the part which received 20 seconds. Repeat your experiment, giving 15 seconds first, and then say 10 as a suplementary time, so that the first half is exposed 15 and the second 15 + 10, *i.e.*, 25 seconds. Development will now probably show you that 20 seconds is the best result of all trials. In this way it should not be difficult to discover quite the best length of time for the standard negative with a given developer. Let us for sake of example say 20 seconds at 3 feet is our standard time for standard negative at standard distance.

Now comes the crux of the whole question. How is this to help one with *other* negatives. The solution of the difficulty is simple enough, provided one or two points are kept clear in mind. Two factors to be kept in mind are : Firstly, with any given light the time should theoretically vary as the square of the distance from the light. That is to say, if 20 seconds at 3 feet gives a certain result, a quarter of the time (viz., 5 seconds) at half the distance (*i.e.*, 1½ feet) should give the same result, or four times the time (80 seconds) at double the distance (6 feet). In order to have this matter conveniently at hand the accompanying table may be conveniently copied on a card and hung on the wall near the gas for ready reference.

The first column gives the actual distance from the gas; the second is the *relative* time of exposure. These numbers, it will be observed, are the squares of the numbers of knots. Thus, the 3-feet knot is No. 6 from burner, and that at 4 feet is No. 8 from burner, so that the relative times at these points corresponding to equal exposures are six times six (36) and eight times eight (64). The remaining columns speak for themselves, being the times corresponding to the standard medium negative, and other negatives weak (thin) and strong (dense).

Secondly, while *theory* says that an exposure of 9 seconds at, say, 2 feet ought to give exactly the same result as four times that exposure (36 seconds) at double the distance (4 feet), yet experience tends to show that some negatives yield the best result with a brief exposure near a strong light, while others call for a prolonged exposure in a weaker light, *i.e.*, at a greater distance away from the same illuminant. And herein lies much of the success of bromide printing, *i.e.*, not only to know *how long* to expose, but also to know *how strong* light to use. It is for this purpose that we shall again need our foot opal glass. The two uses may thus be described: Firstly, the new negative to be printed must be compared with the standard negative (in each case behind the opal glass, of course), so that it may be classified as a weak, medium or strong negative, as the case may be. This enables us to determine which column, A, B, C, D or E, is to be used. To this end it will be as well to compare each new negative with the standard negative at the latter's best point (viz., 3 feet), as has been described above. Secondly it remains to examine each negative at varying distances (using the knotted string as a measuring guide) so as to ascertain at what point the strength of light yields the most harmonious illumination. It will quickly be found that weak, thin negatives (poor in contrast) yield the best results in a weak light, *i.e.*, at some distance away. To these the lower part of the cols. A and B will be found applicable ; while on the contrary dense, hard, strong negatives require a strong light, otherwise only the thinner parts of the negative permit any light to reach the sensitive surface and chalkiness must perforce result. To these cols. D and E apply.

It is obvious that after all exposure is only half

the battle, and complete victory must be sought for by a judiciously combined developer prescribed to meet the symptoms of each patient—at the same time it is equally obvious that correct exposure is a very liberal half of the way to success.

It is beyond the intent of this note to enter into the question of development beyond saying that each exposure must be as it were especially calculated on the assumption that an appropriate developer will be applied to build up the image of which the exposure has laid the invisible foundation.

In exposure keep the two points clear and separate in mind: viz. 1st: What *strength* of *light* will yield the most harmonious result, and 2d: What length of exposure will sufficiently penetrate the high light without once exposing the shadow detail.

Distance from Light.	Relative Time of Exposure.	Very Weak Negative.	Weak Negative.	Standard Negative.	Strong Negative.	Very Strong Negative.
		A	B	C	D	E
1 ft.	4					5
1½ "	9			5	7	10
2 "	16			9	13	18
2½ "	25	7	10	14	21	28
3 "	36	10	15	20	30	40
3½ "	49	13	20	27	40	54
4 "	64	18	27	36	54	72
4½ "	81	22	33	45	67	90
5 "	100	28	42	56	84	132
5½ "	121	34	50			
6 "	144	40	60			

F. C. Lambert.

PHOTO-LITHOGRAPHY WITH ALBERT'S PHOTO-LITHOGRAPHIC TRANSFER PAPER.

Directions for the Use of the Albert Papers.

The very easy and simple treatment my photo-lithographic transfer paper requires will enable almost any experienced and practical man to work with it successfully. My directions should, however, be strictly followed.

Sensitizing the Paper.

The chromate bath consists of

Water .....16 parts
Bichromate of potassium..... 1 part
Alcohol .... 4 parts

Add to this reddish solution as much of stronger aqua ammonia till the color changes to a bright yellow. A slight excess of ammonia does no harm.

When sensitizing paper, it is of the highest importance to have the chromate bath of about 15 deg. R.=60 deg. F. At lower temperature the bath cannot sufficiently penetrate the film, in subsequent operations color will adhere but scantily, and not at all under certain conditions, mainly so with broad or heavy lines, large planes and outrunners.

When the bath is of proper temperature, it should be filtered into a tray of suitable dimension, and the paper, film side up, be immersed into it, where it remains from four to eight minutes, or still longer, till the film has been thoroughly softened, when the sheet is lifted up, held by two corners directly over the tray and drained to the last drop. The sheet is taken hold of by an assistant, who lays it upon a piece of plate glass somewhat larger. The lower edge of the paper, face down, is now attached to the glass, and by means of a bunch of tissue paper or a soft cloth, the paper is squeegeed upon the glass, in absolute contact with it, and all air-bubbles expelled. Previously to this operation the glass must be carefully cleansed, rubbed in with talcum, and a surplus of it be dusted off. A stratum of talcum must necessarily remain upon the glass, without it it is possible to occur, the paper will refuse to be stripped. When the glass is not perfectly clean, or the paper upon it has been dried by heat the same takes place.

After the paper has been laid down, the back of the sheet is wiped off with a soft cloth, partly to assist drying, and partly to force out all chromate bath still adhering to the paper. Any of the bath remaining between paper and glass produces streaks and spots of a color much darker than the ground of the paper, they print darker, and look like blurs.

This would possibly lead to the supposition, a more concentrated chromate solution to be of better effect and be advantageous because of its printing more rapidly, which is quite true to some extent, but when such paper is kept longer than four or six hours it is not fit to be used. It appears almost as being light-struck, and when printed upon, the pigment is removed with greatest difficulty only, a great obstacle to perfect success.

When squeegeed upon the glass the paper is dried in a dark-room slightly heated, which takes from six to twelve hours. Drying may be accelerated by ventilating the room. When the paper appears dry to the touch of the hand, it can be

stripped. Previous to stripping, the paper should be wiped off, to remove from it small paper particles, or other foreign substances, which, were they to remain, would cause unsharp prints.

The glass plates used need not be washed and cleansed before every operation, but they must be kept free from dust, from the touch with greasy fingers, and be talced before other paper is squeegeed upon them. When the paper is stripped before perfectly dry, the film is spongy and produees blisters when being developed and inked, the contours of the picture are blurred, or become so when the transfer is made. Whenever blisters of this description appear, it is best to refuse the print altogether and make a new one. Spongy spots may also come from over-printing, or when tones are attempted to be removed by force.

When stripped from the glass, the paper is highly glossy, is ready for printing, and should of course be kept in the dark. In cases of necessity or to save time, sensitized paper can be dried without squeegeeing, but the final results are never as good.

Sensitized paper should never be kept longer than twenty-four hours. It may be printed upon the second day and in winter the third, perhaps, but il is more practical to prepare only as much paper as will presumably be used in one working day.

Stripped paper should not be kept in a very dry room, the film is apt to become brittle, when it is puite impossible to print sharply upon it. When kept slightly damp, and flexible the process of printing is easier to be examined. In cases paper has become too dry and brittle to print upon it, the original condition may be restored by placing between slightly dampened blotters. The films of my new paper, known as Albert's Autotypic Hochglanz Papier, are so prepared as to make unsharp prints an impossibility.

PRINTING.

I do not use a photometer when printing, but examine the progress of the process by looking at the print, the same as with silver printing, provided the paper is flexible enough. With a little experience one will learn soon how deep to print. The picture should be of brown color, and stand out well from the ground. It is a very bad thing to overprint, lines and dots widen, broaden, developing becomes very difficult, and all details in the middle tints are lost. The tone of the high-gloss paper is different from the ordinary, and requires less time to print. Ink does not adhere to all insufficiently printed pictures, at least not to the denser portions of it.

It is not necessary to use for my papers negatives of special quality, any of them will answer, they neither need be of absolute intensity nor of absolute transparency, very difficult to obtain under the best circumstances, and even from a feeble plate or when slightly fogged good results were had. All that is wanted of the negative is thorough sharpness.

Negatives of large dimensions, not of uniform intensity all over, can be corrected by coating the glass side with aniline colored collodion, scraping out or erasing those portions needing to be printed in advanceof the others, in fact may extensive retouching be undertaken, the same as with a negative for Lichtdruck printing.

A. Albert

(To be continued.)

PHOTOGRAPHING PAINTINGS BY ARTIFICIAL LIGHT.

(The London and Provincial Photographic Association.)

IN photographing paintings by artificial as by any other light, some of the things most important to be observed are the avoidance of reflections which would dim the shadows, and, so far as possible, to avoid bringing into prominence the irregularities of surface of the picture. The general principles of lighting the subject to be copied, and particularly that of the angle at which light should fall upon the picture, in order to escape interferences from both the causes mentioned, have been dealt with in a paper ("Avoiding Reflections and Granularity in Copying"*) read before this society in 1884, and published in the journals of December 19th in that year. There are some points, however, in connection with artificial lighting that should be particularly noticed.

When photographing a picture of moderate size by daylight in a studio of fair dimensions, the difference of angle at which the various portions of the picture receive the light falling upon them need not be great. With artificial illumination it will often be thought desirable to economize the light by bringing it near the picture, and then the various parts will receive the light at very different angles; so much so that it may be difficult or impossible to so arrange it that some part shall not suffer from either reflections or a lighting up of the prominences caused by irregularities of surface. With oil paintings particularly, there is a great

† The *British Journal of Photography*, vol. xxxi., p. 808; *Photographic News*, vol. xxviii., p. 804.

liability to the reflection from the side of each irregular elevation of surface that is inclined towards the source of light, and which has been mentioned in the former paper as the blankety texture sometimes seen near the top of a copy, or along the edge which is nearest the light. It was pointed out that reflection occurs when the angle of incidence of light falling on any part of a picture having a glossy surface, is such that the returning angle will fall upon the lens. It was shown also that the angle must not be taken merely from the general surface of the picture, but from the inclined surfaces of the irregularities existing upon it, and that this consideration involves having the source of light at a greater angle from the axis of the lens than would otherwise be necessary.

When working with the light near any but a very small picture, two kinds of difficulty arise. In the first place, as the light must not be close to the lens, on account of the reflections that would be introduced, but must come from a considerable angular distance, it is obvious that the part of the picture nearest the light will receive more illumination than the opposite side. This difficulty may be minimized where the direction of light will not interfere with the painter's intention, by a second light from the opposite side. Another difficulty, however, is that with a near source of light the angle at which it falls is very different at different parts of the picture, so that, if we get a sufficient angle at the side nearest the light, the illumination will fall very obliquely indeed upon the opposite side. All this points to the desirability of having the source of light as far removed from the picture as is reasonably practicable. The two considerations which will permit of a nearer approach of the light are, first, a small size of picture to be copied, and, secondly, though not to so great an extent, a greater distance of the lens from the subject. This end is secured by using a lens of long focus compared with the size of plate, and this is also desirable for another reason—*i.e.*, that the image will be in a flatter field, and so much stopping down will not be necessary. The main objection to a distant source of artificial light is the length of exposure that would, with some illuminants and in some subjects, be necessary, and hence, no doubt, compromise will frequently be tolerated.

The necessity of placing the light near the picture, and the difficulty arising therefrom, only come into play (except for limitation of space where no large room is available) when the photographic activity of the light is low. Where the electric arc is obtainable the difficulty ceases, and on various accounts with such a light available I should prefer to instal a copying establishment with that, rather than with daylight, especially in London, where we are so much dependent upon weather and season. Magnesium light is also good if a chimney can be fitted to carry off the fumes. With any artificial light (except the magnesium flash) it is easy to intercept the rays that should be cut off by the yellow screen in orthochromatic work, a plan which obviates any optical interference with the working of the lens, and not necessitate specially optically ground-glass of the color required.

A source of light everywhere obtainable, and one which will suit most amateurs, and be quite sufficient for copies for small paintings, especially water colors and such oil paintings, as have not much yellowed by time,is that given by paraffin or gas light. Light of this character may be used without a colored screen, and gives about the same result, as the use of a moderate yellow screen in the lens with daylight illumination.

I have here a few photographs illustrating the copying of paintings by a paraffin illumination as compared with daylight The light used was the lamp from an ordinary three-wick lantern of the sciopticon kind. The condenser was removed on account of the image of the flame which it gives. The distance from the flame to the picture was about forty inches. The lamp was first placed nearly in the line of the camera, and gradually removed to one side until the reflection first visible on the side nearest the lamp had disappeared. The photographs *A* to *G*, representing a female head and a quantity of flowers, are copied from a print in colors, fairly representing a water-color drawing in photographic power, while those *M* and onwards are from an oil painting about twenty years old, and pretty well mellowed in tone.

The plates used were of an ordinary commercial make, and for the orthocromatic series Ilford isochromatics of the instantaneous brand. The lens used was one of Suter's extra rapid aplantics, full aperture, equal to No. 2 on the universal system for exposures.

The exposures given were, for the female head and flower subject, three seconds by daylight for both kinds of plates, sixty seconds for ordinary plate and yellow screen, and twelve seconds for the orthochromatic plate and yellow screen. For paraffin illumination the exposures were: ordinary plate, four minutes ; ditto with yellow screen, one hour ; for the orthochromatic plates, thirty seconds sufficed without the screen, and four minutes with it.

For more ready comparison of the results, I have put them into a tubular form :

		Exposures. Representation of Water-color Drawing.	Oil Painting, somewhat Mellowed.
Daylight..	Ortho plate.....	3 seconds	20 seconds
	Ordinary plate....	3 seconds	20 seconds
	Ortho plate with yellow screen...	12 seconds	80 seconds
	Ordinary plate with yellow screen...	1 minute	6 minutes
Lamplight	Ortho plate.....	30 seconds	30 minutes
	Ordinary plate....	4 minutes	4 hours
	Ortho plate with yellow screen...	2 minutes	30 minutes
	Ordinary plate with yellow screen...	1 hour	

The same screen, was used for day and lamplight, but in the latter case it was placed in front of the lamp ; and with daylight, in front of the lens. The use of color-sensitive plates is very strongly indicated for lamplight exposure, on account of their much greater rapidity in that case, as well as for truer rendering of the blues and yellows.

An advantage of lamplight (even with an ordinary plate) over daylight, unless a deeply tinted screen is used, is seen in the clearness and brightness of the copies of the oil painting. In the daylight reproductions (without screen) the whole surface seems to be covered by a mistiness, which is almost absent in the lamplight copies. The explanation is that the colors of the painting have been so yellowed by time that their photographic effect is very much less than their effect on the eye. The reflections from the surface of the picture are not effected by this yellowness, and, being disproportionately strong, disguise in the photograph the work of the painter. It is on this account that it has been justly observed that the orthocromatic methods (by which expression colored light and colored screens are included as well as specially sensitized plates), the cracks and surface disfigurements of old pictures, so very evident in reproductions by other means, are now no longer so obtrusive.

The figures given in the table must be taken as representing the exposures actually given, which were only approximately correct. The ordinary plates exposed to lamplight would, in several cases, have been the better for even a more lengthy exposure than was given.

When a "lantern" lamp is not at hand, ordinary paraffin lamps may be used. Two of the larger kind of tin-back lamps, placed one a little higher and behind the other, may be used on one side (generally the left), and one on the other side. With a smooth surfaced water-color or fresh painting, very fair results may be obtained in this way.

I have not thought it desirable to go into the question of many sourses of illumination The general principle is the same, but, with such lights as magnesium or the electric arc, yellow screens will have to be used as with as daylight ; but conveniently between the illuminant and the picture, instead of in the lens. Reflectors or weaker lights may also be used on one side, or below the picture, if without them the grain or irregularities show otherwise than the artist intended

There are, I believe, many, especially amateurs, who have paintings of which they would like to have photographs, but who cannot spare day-time for the work. For such subjects as have been indicated I hope some will find pleasure and success in working with artificial light.

One point I omitted to mention until reminded by a question. The lamplight copies of the oil-painting, on plates of both kinds, came out of full intensity, and in fact, if anything, required reducing, whilst the daylight copies of the same subject without screen required a considerable amount of intensification.

W. E. Debenham

PHOTOGRAPHY IN ITS RELATION TO THE ART OF PRINTING.

[Richmond Camera Club.]

In dealing with our subject I do not think it will be out of place to sketch, if only in outline, the history of the sister arts mentioned in our title.

I call printing and photography sisters because, in their highest adaptation, both are applied in expressing all that is most beautiful in nature, in science, or in art. A photograph will present to us a delightful representation, and by the help of printing we can not only look upon a pleasing picture, but the words we read can speak to us almost with the force of a living agent. Printing may be descibed as the art of taking impressions from characters, or figures, on any kind of fabric.

What is Printing?

As we understand the term "printing" in the present day, it may roughly be divided into letter-press printing, lithography, copper or steel-plate printing, and photographic printing, such as Woodbury-type, collotype, etc.

The first of these is from movable letters, metal casts, or blocks either of wood or metal; the second, from drawings on stone; the third, as the description explains, from subjects engraved on steel or copper; and the fourth, from sensitive gelatinous surfaces acted upon by light, and forming reliefs for printing typographically in specially constructed presses.

This is, perhaps, a somewhat technical definition of printing, and a much wider meaning may be given to the term which brings the history of the art back to the very earliest times.

It has been said by one writer that printing is the production of a copy by pressure. That is perfectly true

with regard to the processes I have already named; but, to quote from a history of printing published some years ago:

"It may also be applied to a seal impressed upon wax to close a letter, or to attest a document; to coining, *i.e.*, to print upon gold, or silver, or copper, of whatever substance used. If we give this comprehensive meaning to the word 'printing,' we must recognize the ancient Egyptians as the earliest printers, for they printed inscriptions on bricks, and some of the stamps which they used for the purpose now form part of the antiquarian treasures of the British Museum.

"The Babylonians also practised the art in this rude form more than 2000 years ago, and bricks have been found bearing the name of Nebuchadnezzar. This may be called clay printing, and probably was the first step in the art.

"The next was the use of the seal for making impressions. The Romans used seals at a very early period of their history, and the principle of letter-press printing, though crude, was known to them. They seem certainly to have practised the branding of cattle with red hot irons, which, after all is printing in hair, wool, and hide. That they narrowly missed the invention of printing by wooden blocks, which must have led to movable types, is evident from the inscription on some of the Roman pottery unearthed from time to time. Many of these inscriptions are in raised letters, stamped upon the clay when soft by means of dyes cut in intaglio.

"An accident might have suggested the whole art of printing to an inventive Roman, if one of these inscribed pots had become smoked by a lamp, and in that state had come in contact with a piece of linen or damp vellum; the fortuitous impression thus produced might have given birth to the art.

"The invention of money was another step in the art of printing. As I have already stated, to stamp on a piece of money was nothing else than printing on metal. The method used has not been materially altered in the present day. An engraving of the device to be stamped, or die, as it is called, is cut in a punch, and the punch is forcibly driven against the metal, which is thereby stamped with the device.

"As seals were formed with a graver, and money with a die, it is obvious that engraving preceded the primitive method of printing.

"The first appearance of printing in a practical shape was when the seal, or other stamp, instead of being forced against a softer substance than itself, was wetted with some liquid of the nature of ink, and pressed upon another body, so that an image or picture of the stamp was transferred to that other body."

It is remarkable that as the Chinese are generally credited with first the knowledge of the compass, and with the discovery of less useful but delectable things withal, as fireworks and roast pork, so printing was first accomplished in China, by a minister of the State named Foongtaon, in the tenth century.

"His plan was to place a page of writing, while it was wet, upon the face of a smooth piece of wood. The writing made a mark on the wood, just as a letter does when it is turned down upon a piece of blotting-paper; in a word the writing was impressed or transferred to the wood. Then all that part of the surface of the wood not touched by the writing was cut away, leaving the letters standing out. These were wetted with some kind of ink, paper was then pressed upon them, and an inked copy of the letters was thereby transferred to the paper. This was really and truly the art of printing.

The Chinese are remarkable for their stationary character, and I believe it is a fact that they print in much the same way to-day as they did 1000 years ago. That movable types are not used may be owing to the nature of the Chinese language, consisting as it does—so, at least, I understand—of separate characters for every separate word, being, in fact, signs of words formed without the use of letters.

Printing with wood engravings was effected in 1285, and playing cards, invented to amuse the mad king, Charles VI., were also printed from blocks about 1350; so that we may presume that the art was transplanted from China to Europe most probably through Marco Polo's description of it on his return from his travels.

Movable Types.

The introduction of movable types forms a great stride in the progress of the art of printing. This improvement naturally grew out of block-printing; yet it was effected somewhat circuitously, and may have been as much the result of accident as of design. John Gutenberg was the first person who ever printed with movable types, though his right to the honor of the invention is disputed by the city of Haarlem, which claims the discovery of the art for one of its own citizens, Lawrence Koster.

The pretensions of the Dutch, however, in his favor have been extinguished, and Gutenberg is recognized as the inventor of printing in the methods mentioned.

In 1449 Gutenberg connected himself with a fellow-townsman, named Faust, in the prosecution of his invention, a connection which terminated six years later by a lawsuit commeneed by Faust for the recovery of money advanced.

Previous to his quarrel with Faust, Gutenberg had made types of cut metal. The first book ever printed from these was the "Mazarine Bible," so called because, after the existence of the edition had been forgotten, a copy of it was discovered in Cardinal Mazarine's library in Paris. The leaves are printed on one side only, and seven years were spent in producing it. The first letter in each chapter is painted in by hand.

Peter Schœffer holds the honorable position of being the inventor of cast metal types, without which the art of printing could scarcely have become generally practised.

The casting of types at once reduced the cost of their prduction to less than a hundreth part of what it must have cost to cut them, and thus ensured the eventual spread of the printer's art as an ordinary profession.

It is curious to note that it was the practice of the early printers to pretend that their books were manuscript, their object being not simply to conceal the art, but also to obtain the high prices which were given for manuscript books.

Books were curiosities bcause they were few and costly in production. They were deemed as valuable as houses and lands, and were conveyed from seller to buyer in the same manner as estates. The inducement held out by the value set on manuscripts was so great, that the early printers never sold their books as printed books if they could avoid it.

With one or two exceptions, all the books printed by Gutenberg, Faust, and Shœffer are in the British Museum.

J. H. Alabaster.

(*To be continued.*)

Suspicion.—"Is your father in?" said the man who rang the bell with one hand while he held a bunch of accounts behind him with the other.

"I don't know," said the boy who opened the door. "Got one of your photographs with ye?"

"Why—yes. I believe I have."

"Well, let me take it a minute and I'll find out."—*Wilson's Photographic Magazine.*

Notes and News.

"The Henry Clay is a little giant," writes B. W. KILBURN, of Littleton, N. H.

The death of Geo. J. Kraft, in the 80th year of his age, is announced.

Third annual exhibition of the Camera Club of the University of Pennsylvania, will be held to-night, March 10th, at 8 o'clock, in Drexel Institute, Philadelphia.

Riker & Dickinson dissolved partnership by mutual consent, March 1st, Mr. Dickinson retaining the store at 111 Fulton Street, and Mr. Riker the store at 416 Sixth Avenue.

Griffin & Bolwell, whose advertisement will be seen in another column, report that they are doing a very lively business in the neighborhood of Scranton, Pa., where they have made their headquarters.

The young concern has evidently come to stay. We wish it all success.

A Revolution in Lithography.—Mr Albert Grignard, of the Department of the Interior, Ottawa, Ontario, returned from New York, February 27th, with his solicitor, Mr. W. J. Code, having completed the sale to a New York corporation of an invention in connection with lithographing which will revolutionize this department of the printing trade. It is understood that the consideration paid to Mr. Grignard for the invention is in the neighborhood of $1,000,000, together with a royalty on all the works produced by his system.

The transaction is one of the greatest magnitude, and will affect the operations of every concern in the lithographing business, not only in the United States, but throughout the world. Mr. Grignard has succeeded in so affecting the lithographic art as to produce a perfectly-toned picture, embracing from fifteen to eighteen colors in its composition, from one, or at most three impressions, whereas it orignally required one impression for each color so used. This has hitherto been considered an impossibility, but Mr. Grignard has succeeded in finding the secret for which he has been so well rewarded. Mr. Grignard will remove to New York next week.—*New York Times.*

Photographic Societies.

MEMBERS' EXHIBITION.

THE exhibition of members' work at the rooms of the Society of Amateur Photographers of New York, 111-115 West 38th Street, promises to be a very interesting one, as the pictures exhibited will be entirely the work (posing and exposure of plate, making of negative, printing and toning, retouching, etc.) of the exhibitors. About 500 frames have been received. The exhibits are divided into classes—landscape and marines; figure subjects, including portraiture; architecture, including interiors; hand-camera work; scientific; transparencies and lantern slides. The pictures will be judged by Messrs. Robt. S. Redfield, of the Photographic Society of Philadelphia; Alexander Black and James L. Breese; and Mr. Alfred Stieglitz offers a silver-gilt medal for the best entire exhibit, a silver medal for the best exhibit by a member who has never received a prize in photography, and a silver medal for the best scientific exhibit The committee on the exhibition consists of Messrs. Alfred Stieglitz, Chairman, Wm. M. Murray, Secretary, C. C. Roumage, Wm. B. Post and H. T. Duffield; they have been very energetic in endeavoring to make a success of the affair. There will be no charge for admission to the exhibition, which will open on March 14th, and continue for two weeks, and any one who (with friends) would like to visit it will receive cards of invitation by writing to Mr. T. J. Burton, the Secretary of the Society, addressing him at the rooms.

WORCESTER CAMERA CLUB EXHIBIT.

THE first annual competitive exhibition of the Worcester Camera Club was opened in the rooms of the Art Students' Club in the Walker building. The severity of the storm prevented a large attendance. In all there are a few over 300 prints shown, and these consist of platinotype, bromide and silver prints, the three kinds in which prizes are offered. These are conveniently arranged without the walls.

The exhibitors and the number of prints shown by each are as follows:

D. W. Carter, 6 silver, 11 platinotype and 10 bromide; A. M. Powell, 6 platinotype and 8 bromide enlargements; Albert H. Chaffee, 9 silver, 9 platinotype and 4 bromide; Dr. J. M. Barton, 8 bromide; M. R. Crane, 10 platinotype; H. L. Bancroft, 6 platinotype; Nathaniel Paine, 8 silver, 9 platinotype and 6 bromide; Albert A. Barber, 10 platinotype; George H. Corbett, 3 platinotype; Charles A. Hamilton, 6 platinotype; W. E. Harding, 10 silver; A. H. Parker, 8 silver, 6 platinotype and 4 bromide; E. H. Vaughan, 15 silver and 15 platinotype; J. J. Alton, 12 platinotype; Dr. W. F. Gilman, 14 platinotype; Charles F. Hutchins, 12 platinotype; E. M. Wood, 13 silver; Edward H. Keith, 15 silver, 5 platinotype; H. E. Keith, 10 platinotype, 6 bromide.

The platinotypes make up more than half the exhibit, and some excellent work is shown, which is the case with the bromide and silver prints.

During the day the judges, Charles M. Rice, Rev. Austin S. Garver and J. Chauncey Lyford, were at work coming to a decision, and early in the evening announced the following results: Platinotypes, first prize, H. E. Keith; second prize, A. H. Parker; third prize, J. J. Alton. Honorable mention, A. M. Powell, D. W. Carter, E. H. Vaughan, C. F. Hutchins, Nathaniel Paine, Dr. W. F. Gilman and A. H. Chaffee. Bromides, first prize, H. E. Keith; second prize, D. W. Carter. Honorable mention, A. H. Parker and A. M. Powell. Silver

prints, first prize, E. H. Vaughan; second prize, D. W. Carter. Honorable mention, W. E. Harding.

The prizes consist, for platinotypes, of six platinotype prints of English views, offered by a Philadelphia firm. They are divided, three to first, two to second, and one to third. For the bromide prints, the prizes consist of orders on a Rochester firm for paper made by the firm, while the Camera Club offers special prizes in the silver print class.

The Members of the Exhibition Committee of the Club, to whom the credit of arranging the details of the exhibit is due, consists of Nathaniel Paine, Chairman, Dr. J. M. Barton, A. A. Barker, H. E. Keith, E. M. Wood, H. S. Mirick, M. R. Crane and J. J. Alton.

SEVERAL GOOD REASONS WHY EVERY ENTERPRISING PHOTOGRAPHER SHOULD GET UP AN EXHIBIT FOR THE CONVENTION HELD AT CHICAGO, JULY 18 TO 21, 1893.

It will give you a practical experience that will many times repay you for your outlay and time.

It will give you splendid display pictures for your studio.

It will show your patrons that you are fully up with the times, and you thereby strengthen the confidence that they have placed in you.

It will be the means of improving you in the art of photography. Educate your patrons to distinguish the difference between high class work and the average kind palmed off on the public at large, and will naturally help you to get good living prices for your productions.

Exchanging of ideas must leave its mark every time.

The awards for this year are numerous, and are well worth working for. The officers have nothing to do with appointment of judges. This will do away with the cry of "favoritism," "one of the ring," etc. Each one has an equal chance, and work will count.

To those who have not competed heretofore I would urgently request to do so this year. Think of the great benefit you would derive. Coming home from the World's Fair Convention, victorious. Bringing a prize, be it what it may. Your patrons will feel justly proud of you. The consequence will be artistic and financial gain.

To all those who have competed before and who have been fortunate in securing an award: Do your best work and try again.

To stand still is going backward. If you do not wish to compete for a prize send your work for comparison, and mark it, "not for competition." It will help to educate and elevate those possessing less experience, and furthermore will do us all a wonderful amount of good.

Don't stand back because you think some one else does better work. But get up the best display you can for the Convention, and by comparing you will learn to perfect yourself. And if at first you don't succeed, try, try again.

In conclusion I can assure you the public will stay with you and good work.

Any information pertaining to the Convention will be cheerfully given, by addressing,

Yours fraternally,

Adam Heimberger,
Secretary P. A. of A.

New Albany, Ind.

The Editorial Table.

"The Tripod" for February contains an illustrated supplement of backgrounds, and prints, beside a good deal of interesting matter for photographers.

The first number of the *Photographic Recorder*, a monthly record of photographic progress and events, comes to our table from Zimmerman Bros., of St. Paul, Minn. It is a sixteen-page publication, with considerable interesting and instructive matter for photographers.

The Photographic Times, published at 423 Broome Street, New York City, and edited by W. I. Lincoln Adams, is the foremosf organ of photography in the world. It is illustrated every week with a full page picture in photogravure, phototype or some one of the other high grade printing processes, and contains a wealth of practical information written by experts in the art of photography, both in Europe and America. Its subscription price is $5 per year, but $1 will obtain a three months' trial subscription. A single number is 15c. The picture in each issue is alone worth the price asked for the number.—*The Guardian.*

"The Chemistry of Photography." By W. Jerome Harrison. 426 pp.

"The book contains thirty-four chapters, is very clearly written, and contains many formulas of practical value. It gives a good insight into all the new processes of pure photography, accompanied by brief historical facts as to when the processes were discovered, and by whom. An interesting feature is the full explanation given of several of the latest printing processes. It is a book that can be studied with profit by all photographers desiring to keep posted on the chemistry of photography as developed up to the present time, and will be esteemed by all having the good fortune to possess a copy."—*The American Amateur Photographer.*

Record of Photographic Patents.

492,025. Photographic Camera. Andrew Klay, Bluffton, Ohio.

492,149. Photograph Exhibitor. John Dewé, London, England.

492,245. Magnetic Retouching Tool. Jacob F. Standiford, Muscogee, Ind. Terr.

492,333. Screen for Photo-mechanical Printing. Louis E. and Max Levy, Philadelphia, Pa.

492,335. Photographic Objective. Albert B. Parvin, Philadelphia, Pa.

492,354. Film Measuring and Cutting Device. Frederick J. Harrison, Brooklyn, N. Y.

492,642. Registering device for Photographic Cameras. Paul Tournachon, Paris, France.

492,696. Photographic Camera. Enoch W. Perry, Jr., New York, N. Y.

492,703. Photographic Camera. Joseph Zenk, Schlüsselfeldt, Germany.

DEVELOPMENT.

AN OPEN LETTER TO THE EDITOR OF THE PHOTOGRAPHIC TIMES.

In the fair summer days,
When the camera craze
Had turned nearly every one's pate,
I purchased a beauty,
Being told 'twas my duty.
(A Scovill it was—five by eight.)

Then I read and I read
Till I felt nearly dead,
And, thinking I'd mastered the art,
Took outfit in hand,
Joined an amateur band,
And with them explored every part.

Foot-sore, weary, and lame,
When even-tide came
I was wild the day's pictures to see;
For with plate-holder filled
Not a doubt my soul chilled
As to what the results were to be.

Fancy then my sad plight
When, by dark-closet's light,
Not one perfect negative found I,
Though I'd followed precisely
The directions so nicely
Laid down for beginners to go by.

Where I'd erred, I knew not;
But one plate had a spot
In the centre as large as two eggs—
On another the film
Curled up 'round the rim,
And some cows in the third had *eight* legs.

On the fourth I could see
Not a thing but *one* tree,
Though I'd aimed at a *whole group* of oaks,
And so each of the number
Showed some kind of blunder,
And as pictures were wonderful jokes.

What was I to do?
My outfit was new
And I'd bought everything I could find
To insure my success.
I'm sure you'll confess
I'd a right to feel "low in my mind."

At this stage of affairs
I wandered down stairs
To hunt up my evening mail.
There on top lay your TIMES,
And with it some lines
Which "hoped it might prove of avail."

It *did:* and since then,
Though again and again
I've been puzzled by things going wrong,
I'm sure to find there
The reason laid bare,
And its "hints" *always* help me along.

AND THIS IS FAME.

"What's your idea of fame?

"Being considered handsome enough to have a permanent place in one of those show-cases you see in front of photographers' shops!"

Queries and Answers.

39 W. W.—Will you please tell me how large a room your S. P. C. magnesium cartridges will light?

39 *Answer.*—A No. 2 cartridge, the lens stopped down moderately, will light a room say 20 x 12 or 15 feet.

40 MISS D. M. S.—1. Is N. Y. Aristo paper the same as Omega?

2. After fixing and toning a few prints in a quantity of solution a sediment was formed. Shall I separate it from the clear or shall I shake up?

3. The Omega prints turned out flat and too black; the Aristos were better. Why?

4. Must the prints be washed before toning and fixing in the combined bath?

5. How many cabinet prints can I tone with 8 ounces of solution?

40 *Answer.*—1. Not exactly the same, but similar.

2. Leave the sediment in the bottle and pour in the tray with the clear solution.

3. The Omega prints were toned too long, and probably not printed deep enough.

4. Immerse them at once into the combined bath.

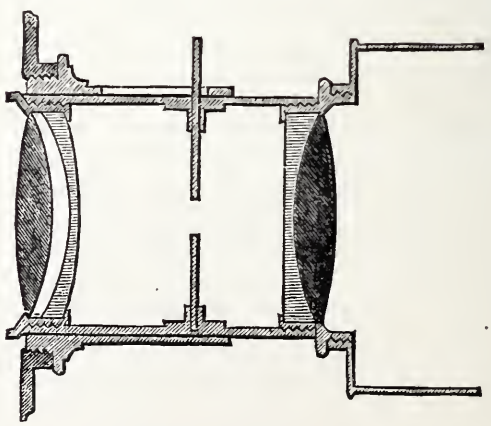
5. You do not state what bath you have; if it is our own you can tone twenty-five cabinet prints with 8 ounces of it.

41 H. OF VIRGINIA.—1. I have removed the combination of lenses from a quarter-size portrait lens, and am now at a loss how to replace them properly.

2. Can you recommend a good book on photographic optics and the construction of lenses?

3. Will the above lens make an enlargement from 4 x 5 negative?

41 *Answer.*—1. This diagram will explain the proper arrangement:



2. Burton's Photographic Optics. The Scovill & Adams Co., publishers.

3. It will if capable of making a negative of the same dimensions and quality as the one to be enlarged. It should do so without stopping down excessively.

BIBLIOGRAPHIC SUPPLEMENT

TO THE

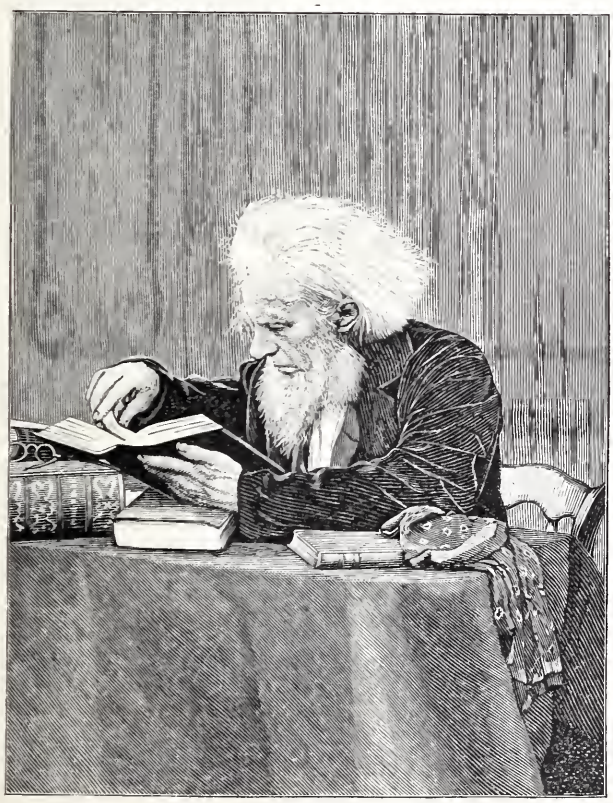
Photographic Times.

CONDUCTED BY C. W. CANFIELD.

MARCH, 1893.

THE "CONSTANT READER."

THE photograph from which the engraving was made originally appeared in Vol. I. of the *Photographer's Friend.*



We may imagine that our white-haired friend is reading up the latest wrinkles in photography—probably the last volume of THE TIMES. At all events, he is much in earnest and we cannot doubt that his reading will benefit him—and you as well, gentle reader.

A RECEIPT.

When you're in love be not too staid,
'Twill only make the lassie laugh,
Go, give *yourself* unto the maid—
'Tis better than a photograph!

AMERICAN BIBLIOGRAPHY OF PHOTOGRAPHIES.

PHOTOGRAPHIC JOURNALS—*Continued.*

CLASS A.

HUMPHREY'S JOURNAL OF PHOTOGRAPHY AND THE ALLIED ARTS.

As previously noted this journal was the continuation of the *Daguerrean Journal*, and the first number under the new title was issued April 15, 1852, and was called No. 1 of Vol. IV.

Vol. IV., April 15, 1852, to April 1, 1853.
Vol. V., April 15, 1853, to April 1, 1854.
Vol. VI., April 15, 1854, to April 1, 1855.
Vol. VII., April 15, 1855, to April 1, 1856.
Vol. VIII., April 15, 1856, to April 1, 1857.
Vol. IX., April 15, 1857, to April 1, 1858.
Vol. X., April 15, 1858, to April 1, 1859.

Each consisted of 384 pages, edited by S. D. Humphrey.

On April 1, 1859, Jos. H. Ladd, who had been the printer and publisher, announced his purchase of all the right, title, and interest of Mr. Humphrey; and Vols, XI., April 15, 1859, to April 1, 1860; XII., April 15, 1860, to April 1, 1861; XIII., April 15, 1861, to April 1, 1862, had no editorial figurehead.

No. 1 of Vol. XIV., May 1, 1862, appeared as an eight-page newspaper quarto, four columns to the page, under title of "*Humphrey's Journal of Photography, Chemistry, and Pharmacy*, a semi-monthly trade circular."

No. 2 for May 15th, and No. 3, June 1st, were in the same form, but No. 4, for July 1st returned to the previous form, and the paging of Vol. XIV. commences with that number. The return is accompanied by the following announcement in the number for June 1st:

We have made the experiment of a quarto form, and have found it wanting in one important particular, and that is, pecuniary success; it takes just twice the amount of composition to fill its pages, and to continue it would "run us under" in time.

With the July number, Prof. John Towler was announced as editor, and his name appears on the title page of volumes

XIV., July 1, 1862, to April 1, 1863.
XV., April 15, 1863, to April 1, 1864.
XVI., April 15, 1864, to April 1, 1865.
XVII., April 15, 1865, to April 1, 1866.
XVIII., April 15, 1866, to April 1, 1867.

The number for Nov. 15, 1867, Vol. XIX., No. 16, p. 224, has the following:

OUR EDITORIAL CORPS.—We have discontinued publishing the name of Prof. Towler, or that of any other editor on our title-page. Prof. Towler's name has been on the *Journal* for some time back as editor, but he never fulfilled the duties; he never had to do with or furnished any articles except his own, one or two in each number, and he contributed no matter to the *Journal* save what he sent in over his own signature.

Vol. XIX., April 15, 1867, to April 1, 1868, has no editor named.

December 15, 1868, the subscription price was reduced from $3 to $1, and the *Journal* was published only once a month, on the 15th On August 15, 1869, this price was advanced to $2.

Vol. XX., May 1, 1868, to December 15, 1869, accordingly, consists of 28 numbers, pp. 447.

Vol. XXI. commenced on January 1, 1870. The February number was stitched and bound in paper cover.

The number for July, being No. 7 of Vol. XXI., and Whole Number 491, contains the following "ad.":

LIBRARY OF THE PHOTOGRAPHIC TIMES.

(*Continued.*)

"Anthony's International Annual," Vols. I., II., III., IV.
"Art Essays," Burnet's.
"Art, The Graphic," G. Hamerton.
"Art Recreations," Kemble.
"Analysis, Spectrum," Lockyer.
"Art of Silver Printing," Robinson & Abney.
"American Carbon Manual."
"Artistic Printing," Hearn.
"Art of Retouching," Burrow & Colton.
"Amateur Photographer, Der," Liesegang, 1887, '88.
"Archiv, Photographisches," Liesegang, 1886, '87, '88, '89.
"A. B. C. of Photography," Burtons, publishers, Liesegang.
"Almanach," Liesegang, 1886, '87, '88, '89, '90.
"Augenblicks-photographie, Die," Dr. Jos. M. Eder.
"Actinometrie, Die," Capt. G. Pizzighelli.
"Aehnlichkeit in Portraits, Photographie," Dr. Arnold.
"Art Photography," H. P. Robinson.
"Amateur Photographer's Annual."
"Arsbok Fotografisk Tidskrift."
"Bromsilber Gelatine Verfahren, Das," Liesegang.
"Bibliotheca Polytechnica," C. Shepansky.
"Chemistry of Photography," R. Meldola.
"Carbon Manual."
"Crayon Portraits," Crocket.
"Calcographic," R. Roux.
"Collodion Verfahren, Das," Liesegang.
"Carbon Printing, Manual of," Liesegang.
"Celluloid, Das," Dr. F. Bickmann.
"Chemistry, Photographic," Arnold Spiller.
"Collorist's Guide," John Gihon.
"Dictionary, Photographic," J. Sutton.
"Daguerreotypy, Handbook of," Humphrey.
"Daguerreotypist, The American," Humphrey.
"Dry Plate Photography," Dr. John Towler.
"Deutsche Photographen Zeitung," 1886, '87, '88, '89, '90.
"Deutscher Photographen Kalender."
"David & Scolik, Die Photographie mit Brom-Silber Gelatin."
"Dodges, 100 Photographic."
"Development of Gelatine Plates," Burbank.
"Etching and Etchers," P. G. Hamerton.
"Eye, The Photographic." 1880, incomplete, and 1890.
"Experimental Photography,' C. J. Leaper.
"Eder, Dr. Die Photographie mit Brom-Silber Gelatin."
"Eder, Dr. Jahrbuch fur 1890, 1891."
"Entwicklungs, druck Der."
"Ferrotyper's Guide, The."
"Ferreotope, The and How to Make it," E. Estabrook, 1st and 2d Edition.
"Ferreotypie, Die," Liesegang.
"Formulæ, Practical," Griswold & Holmes.
"Glass Schmelzerei," Schott & Gen.
"Grammar of Ornament," Owen Jones.
"Heliochromy, New Principle of," F. E. Ives.
"Hardwich's Photographic Chemistry," Humphrey's 4th and 5th Edition.
"Harmonious Coloring," Newman.
"Hand Book of Photography," Dr. W. H. Vogel.
"History of Photography," C. Tissandier.
"How to Sit for a Photograph," "Chip."
"Handbuch der Photographic," Liesegang.
"Heliographie, Die," Jacob Husnik.
"Handbook. Photographer's Indespensible," W. D. Welford.
"Handbook of Photography" (Russian).

(*To be continued.*)

THE ADVANTAGES OF READING.

One of the main reasons why so many amateur photographers have attained such eminent success in their work is, without doubt to be found in the fact that they are regular and careful students of photographic literature.

No matter what may be said to the contrary, the dissemination of ideas, the formulas for new processes and the interchange of thought and method which it is impossible to obtain except through the photographic journals and current photographic literature of the day, is the ladder on which many an one has risen to prominence from the excellence of his work.

We do not mean by this, that reading makes an artist unless the principles of artistic composition are inherent in the operator, but a knowledge of the various methods of manipulation in use, the almost endless variety of agents to be employed for the accomplishment of certain results and the apparently inexhaustible supply of 'kinks" for arriving at a solution of any one or all of the difficulties so often arising to confront the worker in this field—is of inestimable value to him who would be more than a mere button pusher; and now that the season of stormy, dark days, and long evenings, is upon us, is the time to acquire the knowledge which, digested and theoretically worked out in the interim, may be put to practical test during the coming spring and summer.—*The Pointer.*

Wanted.

(Advertisements under this heading will be inserted for subscribers to THE PHOTOGRAPHIC TIMES without charge.)

WANTED.—August 28th, November 13th, 1891, issues of THE PHOTOGRAPHIC TIMES. Address L. M., Care of THE PHOTOGRAPHIC TIMES.

WANTED.—A copy of Burnett's Art Essays as reprinted by Edward L. Wilson. Will pay $2 cash for a copy if in good condition. Address LIBRARIAN,
CARE THE PHOTOGRAPHIC TIMES.

WANTED TO COMPLETE A FILE.—A copy of THE PHOTOGRAPHIC TIMES for November (monthly or weekly parts) for 1886. Address, with price asked,
COMPLETE FILE,
care THE PHOTOGRAPHIC TIMES.

For Sale.

(Advertisements under this heading will be inserted at the regular rate for Business Notices, viz.: Twenty-five cents per line.)

FLASH-LIGHTS AND HOW TO MAKE THEM! A complete treatise on Flash Light work Fully illustrated by Louis Clarence Bennett. Price 50 cents. Order a copy now from THE SCOVILL & ADAMS CO.

A GENUINE BARGAIN.—Bound volumes of the *Philadelphia Photographer* for 1885 and 1889, each year complete in one volume and bound in full morocco leather. Original cost, $7 each. Will sell for $3 per volume. Sent to any address by express on receipt of the amount. *Anthony's Bulletin* for 1886 and 1889, bound in red cloth, uniform with the publisher's binding, each year complete in the one volume with all the illustrations. Cost $6 per volume. Will sell for $2 each. Address
BOUND VOLUME,
Care of THE PHOTOGRAPHIC TIMES.

ANNUALS.

Back volumes of "The American Annual of Photography and Photographic Times Almanac" are becoming very scarce. We have a limited stock of the following volumes which we will sell at the regular published prices as long as they hold out.

1887, in paper, 50 cents; cloth bound, $1.
1888, in paper, 50 cents; cloth bound, 1.
1889. Out of print.
1890, in paper, 50 cents; cloth bound, 1.
1891, in paper 50 cents; cloth bound, 1.
1892. Out of print.
(Postage, 12 cents extra).

Order now and secure your copies of the back volumes of this valuable work at these prices.

THE SCOVILL & ADAMS COMPANY,
(Publication Department).

A FEW RARE VOLUMES OF

THE PHOTOGRAPHIC TIMES

UNBOUND.

We have just obtained the following complete volumes of THE TIMES, in good condition, unbound, which we will sell to complete sets for our subscribers, at just the published prices, though they are very rare volumes:

Vol. XVI., 1886, - - - $3
Vol. XVII., 1887, - - - - 3
Vol. XVIII., 1888, - - - - 3

THE PHOTOGRAPHIC TIMES
PUBLISHING ASSOCIATION.

I HAVE THE FOLLOWING BOOKS ON CONSIGNMENT:—

"Photographic Mosaics," 1871. Paper.....$0 35
"Photo Friend Almanac," 1873. Paper..... 15
"Magic Lantern Manual." Chadwick. 1886. Cloth..... 40
"Hardwich's Photographic Chemistry." Ninth edition. Edited by J. Traill Taylor. 1886. Leatherette..... 1 25
"Studies in Artistic Printing." Hearn, Philadelphia. 1877. Cloth..... 1 25
"The Photographic Amateur." Taylor. Second edition. New York. 1883. Paper..... 40
"Modern Practice of Retouching." Piguepé, New York. 1886. Paper. (Second edition.) 40

C. W. CANFIELD.
1321 Broadway, New York.

"THE KNACK."

NOT THE CAMERA,

BUT THE BOOK.

Written expressly to help the beginner in perplexity.

Price, reduced to 25 cents.

Sent postpaid to any address on receipt of the price by

THE SCOVILL & ADAMS CO.,
423 Broome Street, New York.

A Few Odd Volumes

OF

THE PHOTOGRAPHIC TIMES

Published between 1873 and 1884, each volume covering one year, bound in cloth with gilt stamp, are offered for sale at ONE DOLLAR A VOLUME, express charges to be paid by purchaser. Address The Photographic Times Publishing Association, 423 Broome Street, New York.

THE PHOTOGRAPHIC TIMES BINDER.

BEAUTY, SIMPLICITY, DURABILITY, CONVENIENCE AND ECONOMY PERFECTLY UNITED.

Binds the Magazine for Six Months.



Price, postpaid, to any address, $1.00.

The Photographic Times Binder will be found a great convenience, not only for holding together the numbers for six months in neat and permanent form, but also for keeping in place the loose copies as they are received from week to week.

THE SOLID WOODEN BACK presents an attractive appearance, corresponding to a permanently bound book, and is in striking contrast to all other binders, with their soft, "mushy" backs, equally untidy on the table or library shelf.

NON-MUTILATION OF CONTENTS.—The magazines are instantly but securely bound by the thin slats which run the length of the magazine, and yet can be removed at pleasure. For binding them, as fast as they arrive, it has no equal, since the Binder appears nearly as neat as when completely filled.

BOUND VOLUMES

—OF—

THE PHOTOGRAPHIC TIMES.

Volume XXII.

We are now ready to supply our readers with bound volumes of THE PHOTOGRAPHIC TIMES for 1892, uniform with the preceding volumes.

They are substantially bound in neat red cloth, with and without advertisements.

With Advertisements, complete, in two parts, $7.00
Without " " in one volume, 6.00

When the numbers of THE TIMES for the year are returned, *in good condition*, we allow full subscription price for them, charging only the cost of binding, viz., as follows:

With Advertisements, in two parts, - - - $2.00
Without " in one volume, - - - 1.00

A bound volume of THE PHOTOGRAPHIC TIMES, with its full and complete index, is, as it has been termed,

"A COMPLETE PHOTOGRAPHIC LIBRARY."

There are a limited number of copies. Order at once if you want a bound volume.

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 BROOME STREET,
New York City.

BACK BOUND VOLUMES

—OF—

THE PHOTOGRAPHIC TIMES

Are Very Scarce.

We have a few copies of some odd volumes between 1873–84 which we can supply those who desire to complete their sets, as above,

FOR ONE DOLLAR PER VOLUME,

bound, with advertisements, in red cloth, uniform with the other volumes.

We have a very few bound volumes left of the following years which we will sell at the published price, plus just the cost of binding, as follows:

Vol. 15, 1885 (in one part, without advertisements), $4.00
Vol. 16, 1886 (in two parts, with advertisements), 5.00
Vol. 16, 1886 (in one part, without advertisements), 4.00
Vol. 18, 1888 (in two parts, with advertisements), 5.00
Vol. 20, 1890 (in two parts, with advertisements), 7.00
Vol. 20, 1890 (in one part, without advertisements), 6.00
Vol. 21, 1891 (in two parts, with advertisements), 7.00
Vol. 21, 1891 (in one part, without advertisements), 6.00

Other volumes are at a premium. We cannot supply them, *at any price*, as we have none left in stock and do not know where we can get them.

The above prices are subject to change at any time.

Order at once if you want them at these prices to complete your sets.

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 BROOME STREET,
New York City.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

SUBSCRIPTION RATES.

Weekly (illustrated) for one year $5 00
" " " six months 2 50
" " three month's trial 1 00

Single copy, 15 cents.
On Foreign Subscriptions $1 00 is added to pay postage.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Subscriptions to THE PHOTOGRAPHIC TIMES received by all dealers in photographic materials in this and foreign countries, also by the American News Co. and all its branches.

ADVERTISING RATES.

Size of advertising pages, 6¼x9¼ inches; outside size, 8½x11¾ inches.

One page, each insertion $25 00
Half page, per insertion 15 00
Quarter page, per insertion 8 00
Eighth " " " 5 00
Business Notices, not displayed, per line 25

Discount for term contracts.

Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

SOLD OUT! SOLD OUT!

THE publishers of "The American Annual of Photography and Photographic Times Almanac" for 1893, beg to announce that the entire edition consisting of over 18,000 copies has been exhausted, and that they are unable to fill further trade orders.

They offer to announce in these columns without charge, the name and address of any dealer who may still have a few copies for sale. They request that such dealers will kindly notify them at once, as they are constantly receiving requests for the "Annuals" which they cannot fill and they wish so far as possible to facilitate the means by which every one who desires a copy of the book may obtain it.

WHERE YOU CAN OBTAIN THE AMERICAN ANNUAL.

Lenox Photo Supply Co. report a few copies of the Times Annuals still on hand.

Frank N. Blake, of North Adams, Mass., announces that he has ten (10) copies in paper covers still unsold.

W. D. Gatchell, agent, photographic materials, at 343 W. Jefferson St., Louisville, Ky., reports a small number of The American Annuals for 1893 still in stock.

R. M. Davis, 1728 Arapahoe St., Denver, Colo., has some copies of "The American Annual of Photography and Photographic Times Almanac for 1893" still on hand, all in paper covers.

Vallentine & Dickerson, 637 Broad St., Newark, N. J., report that they have seven copies remaining of "The American Annual of Photography and Photographic Times Almanac for 1893."

The Geneva Optical Company, 67 Washington St., Chicago, writes that "a few copies still remain unsold on our shelves. * * * There is but one opinion expressed as to the book itself—'Unequalled and indispensible.'"

E. J. Horsman, 341 Broadway, reports eleven copies in paper covers.

Geo. J. Wolf & Co., 918 Arch St., Philadelphia, report some unsold copies in paper covers.

Butts & Adams.—"The modern and progressive" photographic stock house at 457 and 459 Washington Street, Buffalo, N. Y., report that they have a few of the '93 Annuals for sale, both in paper and cloth.

Messrs. E. M. Newcomb & Co., dealers in photographic apparatus and supplies, at 69 West 36th Street, New York City, write in regard to "The Annual" as follows:

"We have copies of '88, '90, '91, '92 and '93 Annuals, paper and cloth, and will sell them at the list price until exhausted. We have one copy of the Edition de Luxe, 1889, at $25.

A LETTER WHICH EXPLAINS ITSELF.

BROOKLYN, N. Y., May 18, 1889.

E. LONG, ESQ., Quincy, Ill.

Dear Sir: Some five years ago, out of curiosity, I purchased one of your books on *crayon portraiture*. At the time I had no knowledge whatever regarding the manner of handling crayons, but your instructions were so clear and concise that I ventured to make a trial of it, and sent you a miserable photo, or more properly a "tin-type," with a request to send me a life-size solar print of it. In due course of time it arrived, and I was not only pleased but surprised with the clearness of the copy. It was free from those disfiguring spots which I had noticed on some prints made here and in New York City, and every detail was so nicely graded that I felt sure of success from the start. I soon got to work, and with your book of instructions before me, had the work completed in three or four evenings. The likeness was perfect, and(if you will believe it) better than the original picture. To-day it is just as clear and strong as on the day (or night) it was completed, with no indications of fading, although it has hung in a strongly lighted-room during the entire period.

Since then I have had a number of solars made at your establishment, and all have been treated by you with that same care which characterized the first one. While I can get solars at a trifle lower price here, I prefer paying the difference and express charges for the superior work which your house turns out.

Furthermore, I feel assured that any one who has eyes to see and hands to hold and move a stump or crayon, whether they have knowledge of drawing or not can, by following instructions recorded in your book and working on *your* solars, turn out as fine work as can be desired. All I can say is, let them try it and be convinced.

Very truly yours,
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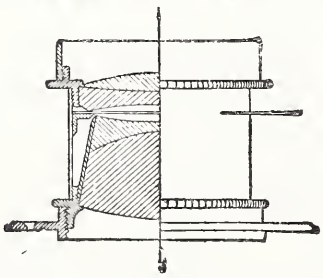
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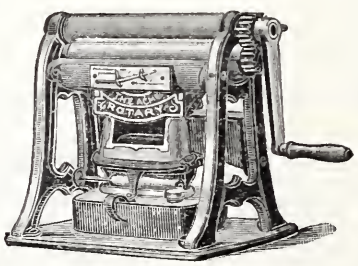
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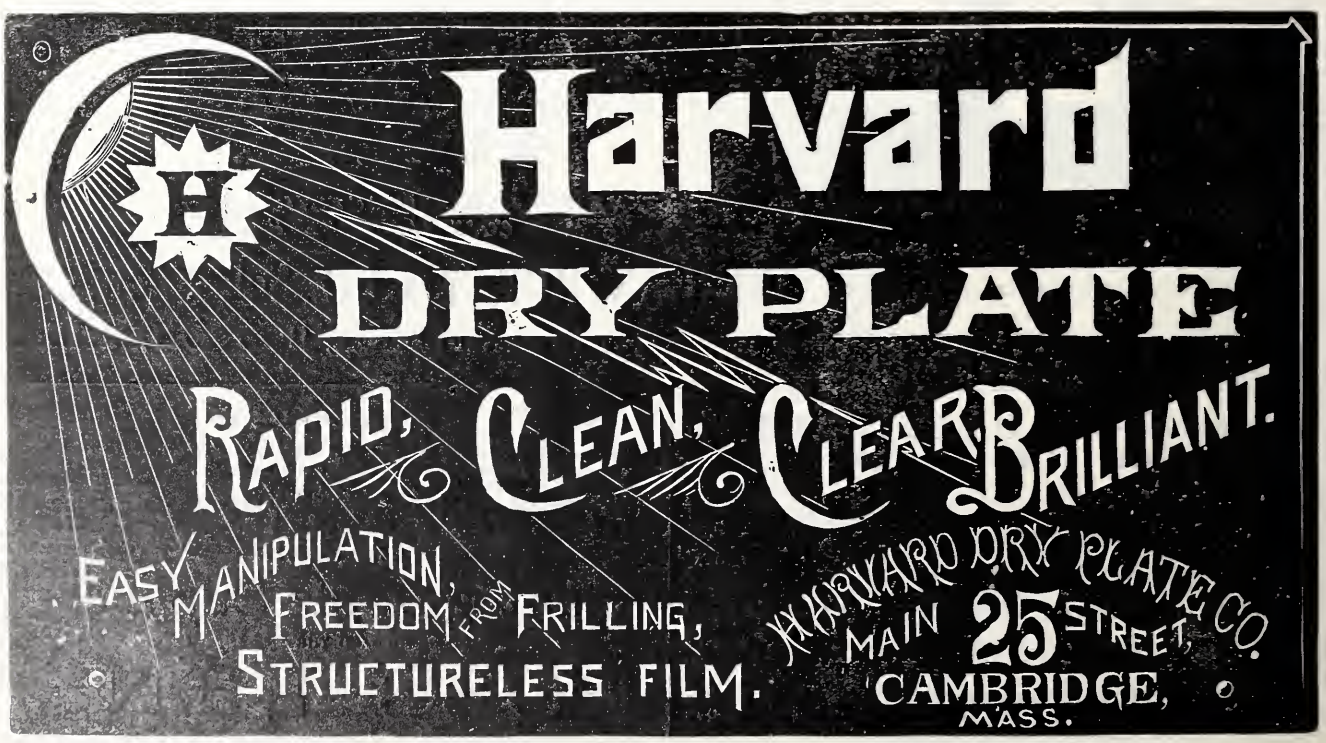
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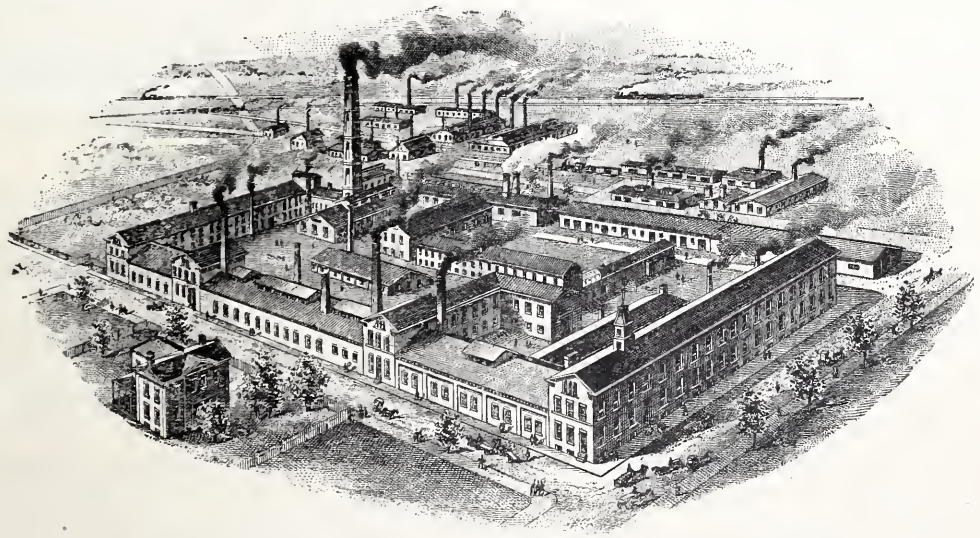
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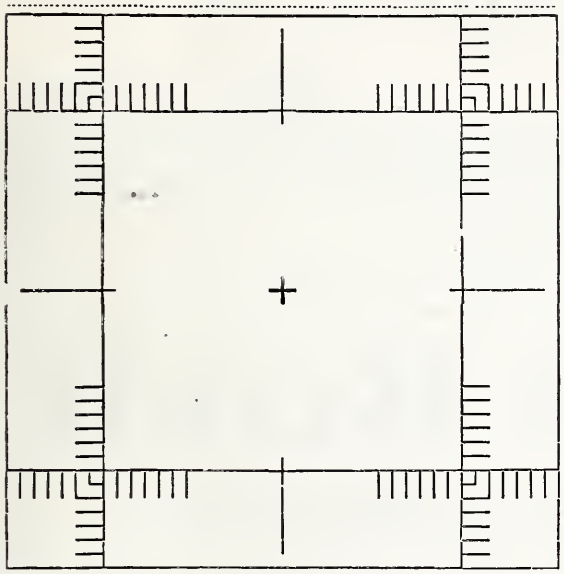
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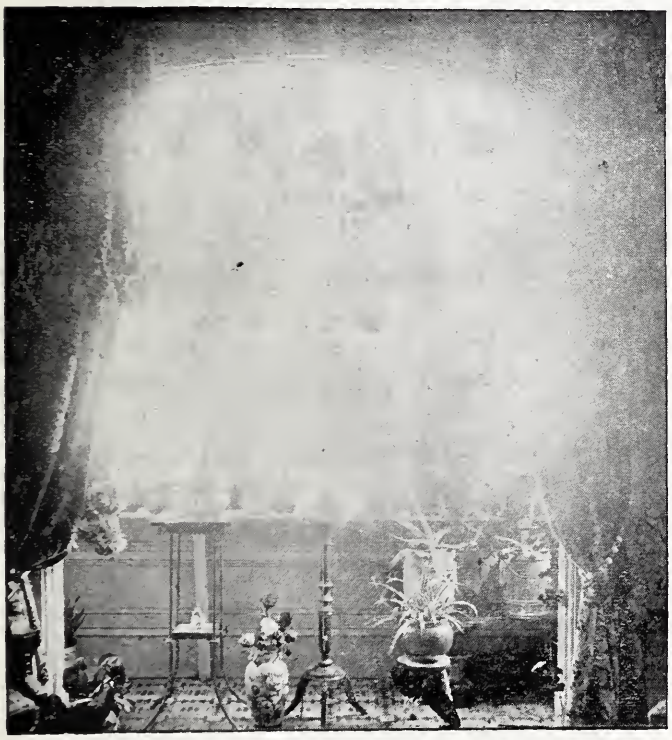
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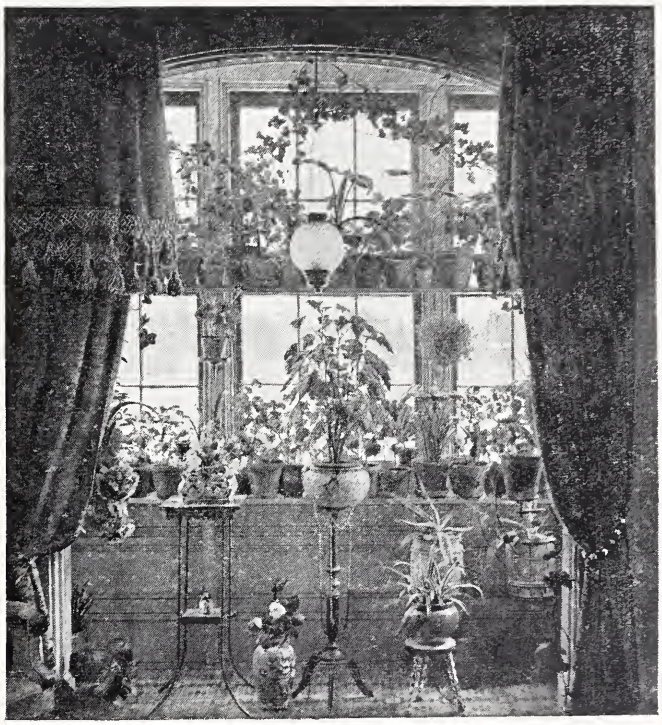
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Geo. G. Rockwood, Photo. F. Gutekunst, Engraver.

THE YOUNGEST MEMBER OF "THE TIMES" STAFF.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. MARCH 17, 1893. NO. 600.

PHOTOGRAPHED.

For years, an ever-shifting shade
The sunshine of my visage made;
Then, spider-like, the captive caught
In meshes of immortal thought.

E'en so, with half-averted eye,
Day after day I passed thee by,
Till, suddenly, a subtler art
Enshrined thee in my heart of hearts.

JOHN B. TABB, in *The Cosmopolitan*.

"THE YOUNGEST MEMBER OF THE TIMES STAFF."

WE take pleasure in presenting our readers this week with the portrait of Wilson Irving Adams, "The Youngest Member of THE TIMES Staff."

The negative was made by Mr. Rockwood, that most successful of photographers, especially with children, in his elegant new studio on the ground floor at 1440 Broadway, New York City. The exposure was instantaneous and the day a rather dark one. This accounts for the slight harshness of effect in the phototype reproduction.

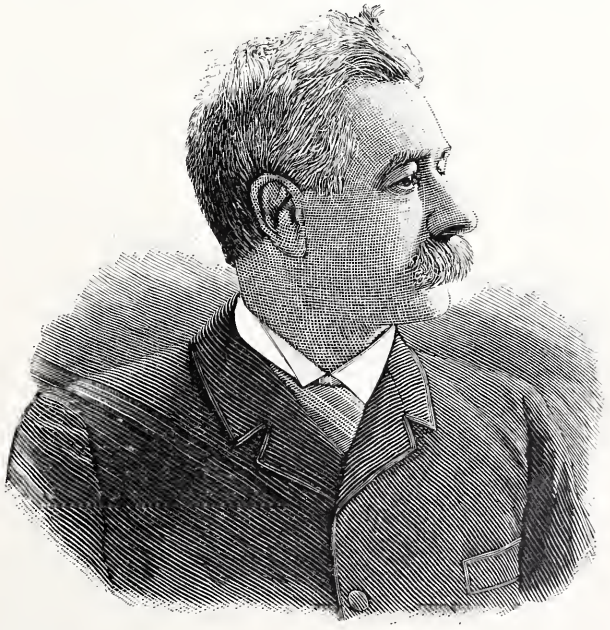
The likeness is an excellent one, however, and both in naturalness and ease of pose and affectiveness of lighting, under rather difficult circumstances, is a fair example of Mr. Rockwood's artistic skill.

Young Mr. Adams, of the third generation, while not yet a practical photographer, is, however, already familiar with the camera! He has been the subject of many pictures, and wears for a breastpin a perfect camera in miniature, the appropriate gift of a well-known lady who is herself a camerist and an editor.

The grandfather and father are looking forward to the time when our subject may take up the work, founded by the one and continued by the other, and be a member of THE PHOTOGRAPIC TIMES' staff in more than name.

A USEFUL MAN.

MR. GAYTON A. DOUGLASS, of Chicago, is one of the most active men in all that pertains to the progress of photography and the kindred sciences in America. He is prominently connected with a half dozen different scientific societies. He is Vice-Chairman of the Committee of the World's Congress Auxiliary on a Congress of Photographers, an active member of the Chicago Camera Club, The Lantern-Slide Club, a member of the Executive Committee of the Academy of Sciences, a



member of the Evolution Club, an active worker in astronomical societies, and is moreover proficient in the science of surgery. He is himself a skilled physician though he never took a degree. He is an amateur astronomer of no mean ability, is a good chemist and optician, beside being a skilled photographer. His days are spent in the management of a photographic supply business, of which he is Vice-President, and his nights in the cause of science.

Here is a typical week as described by himself in a recent personal letter :

"Every night so far this week, I have had a meeting to attend, and had work to do. Tuesday night at 6, a dinner and work in committee until 8; then meeting of Academy of Sciences until after 11. Last night (Wednesday), a dinner at the Evolution Club, and session until after ten. To-night (Thursday), Lantern-Slide Club, to-morrow at 4.30, Mr. Carbutt and I go to Judge Bradwell's studio, and then dine with him at his home; Saturday night if clear, a trip to Evanston to the Observatory with Mr. Turner of the Gundlach Co.; Sunday, A.M., Mr. Burnham and Prof. Eastero and myself visit the Horticultural department of the World's Fair, by invitation of the director of the department."

PRESERVATION OF GELATINE NEGATIVES.

Photographisches Archiv has begun to publish the answers which it has received to the circulars sent out to its readers, and to the photographic public generally, in regard to the durability of gelatine emulsion negatives. We have spoken before on this interesting subject, and have broadly related our own experience. Now our worthy cotemporary publishes the answers to his inquiries, which were put in the form of the following questions :

1. When were your first Gelatine negatives made ?
2. Have they retained clearness, and are they free from stain ?
3. Were they varnished, intensified or reduced, and by what method ?
4. How did you store your negatives ?
5. How were they fixed and washed ?
6. Have any means beside careful washing been employed to remove the last traces of hypo ?
7. What other observations have you made in regard to the durability of such negatives ?

The answers to these questions, and we selected those coming from high authorities in Germany, Austria and other foreign countries, tell us that the first negatives upon gelatine emulsion plates were made in the beginning of the eighties, although some had made gelatine negatives previously, in 1879. All those developed to printing intensity, fixed and washed without the aid of chemical means, seem to have stood well during the time of from ten to twelve years. Intensifying with mercury and by other means is much commented upon, the general verdict being against these methods, although a few instances are mentioned where intensified negatives have been well preserved.

Of reducing agents, Farmer's solution has given the most durable negatives, and appears to have stood the test of time quite well.

Hypo elimination by chemical means has not done as well as was expected. The best results have been those with hypochlorites, but thorough washing in pure water takes preference in all cases.

The storing away of the negative is another important factor in the solving of the questions. When kept in changeable temperature and the state of moisture of the atmosphere, negatives do not keep, the film will blister or scale off its glass support, crack or break. Negatives kept in grooved receptacles, the air allowed to pass freely between them, have stood the test of time.

From these remarks we deduce, that the fear of gelatine negatives being not as durable as those made upon collodion films, is groundless, provided proper precautions are observed. Develop carefully to desirable printing intensity, avoid reducing or intensifying as much as possible, fix thoroughly in frequently renewed hypo baths, and remove the last trace of the fixing agent and derivatives of the fixing process by washing in pure water only.

Varnishing is not an absolute necessity to secure durable gelatine negatives but when it must be done a strong collodion, or zapon, a solution of pyroxylime in amyl acetate seems to give the best results.

PHOTO-LITHOGRAPHY WITH ALBERT'S PHOTO-LITHOGRAPHIC TRANSFER PAPER.

(*Continued from page* 126 *and concluded.*)

Inking.

This can be done in a variety of manners, the main object being to distribute a light tone uniformly all over the copy, and it is immaterial whether it is done with a rag, tampon, or velvet roller, as long as the result is good. Still, with a velvet roller much time is saved, and it is certainly the safest method to ink up.

With a lithographic leather roller distribute ordinarily, but with good transfer ink upon a lithographic stone, ink up the velvet roller and roll over the copy, spread out upon a plane and smooth surface and continue rolling till a light tone is over the whole drawing. The stronger portions of the drawing should remain visible, if not, there is a superabundance of ink.

After rolling up immerse the print in cold, clear water ; it must be completely submerged and

all air bubbles forming be carefully removed. After from fifteen to thirty minutes remove the print from the water, drain well, spread again upon the copying plate, and soak up with bibulous or tissue paper all moisture adhering. Care should be taken not to double up the paper, or wrinkle it. The copy is now again inked with the velvet roller when the print will appear with distinctness and gain in relief as the roller takes off the ink from the non-exposed parts. It is practicable to do the first inking with but little color; if intensifying should eventually beeome necessary let it be done with the second operation.

Ink in abundance produces many difficulties, especially so with autotypes.* Finer details become clogged up and it is almost impossible to remove. Then after repeated rolling up the image has come out distinctly, and the yellow color of the chromate bath is entirely gone, all that is necessary to be done is to wash off with a fine sponge. It is absolutely necessary to get rid of every trace of color, were any of it to remain, light acting upon it hardens the film.

Drawings with coarse lines need be rolled up but once, but with sufficient color and well washed afterwards, as above described. When, notwithstanding proper sensitizing and correct exposure, ink will not at all or but little adhere to the exposed portions, the working room is evidently too cold, or the ink is not liquid enough, in which case it must be diluted with poppy or nut oil.

When after rolling up the copy is still of yellow color it must be again immersed in pure water till white and again be rolled np. The wash water retaining a yellow tinge must be removed. The purer the water the whiter will be the ground of the print.

Insufficiently washed prints do not moisture well between the blotters because of light acting upon the chromate and hardening the film.

One of the greatest advantages offered by my photo-lithographic paper is the property to develop densest shadows with all possible detail. Two difficulties are frequently encountered with photo-lithographic processes, namely, superabundance of ink and over-printing. Too little ink is but rarely the cause of failures, and under-exposures do rarely occur. But little ink so rich on fatty matter is required. When after second rolling up ink will still adhere to the non-exposed parts, there is sufficient evidence of over-exposure, or of too much ink on the roller or possibly of a very feeble negative.

* Germans and Austrians apply the name *autotype* to what is known to us as photo-engraving in half-tones.—*Translator*

The velvet roller should be always kept wrapped up in tissue paper and in a box; it should never be washed or cleaned but be carefully kept from dust. The velvet having been used up or the ink being hard and crusty, a new cover of fine woolen velvet is to be applied.

The working room should be heated in the cold season; roller, ink, ink slab, and glass plate should not feel cold to the touch of the hand. When cold, ink can not be distributed uniformly neither will it adhere properly.

Developed and finished prints are placed between fine and perfectly smooth tissue paper, and by slightly pressing all moisture removed. They are then tacked upon a clean board dryed spontaneously in a slightly warmed room free from dust.

Transferring upon Lithographic Stone.

The dried copies are first placed between moist blotters. If it is desired to make also entaglios, it is absolutely necessary to moisture first the photo-lithographic paper, and then the entaglio copy, for all transfer papers attract moisture about twenty times quicker than photo-lithographic copies.

For line (raster) and grain (korn) copies fine tissue paper should be used instead of blotters to avoid the possible adhering of paper fibres. Line and grain negatives should be blocked out to the extent of half an inch all around the drawing, as the tiny little interstices in the plate increase the difficulty of transferring upon stone, zinc, or other metals.

When passing the first time through the press, but slight pressure should be applied but increased by every subsequent operation, and the transfer be repeatedly moistened with the sponge. The transfer having passed through the press for the last time, is now lifted up without further moistening. Intensifying is done in the usual way. For line and grain work much caution is required, and but very little color in the sponge.

Nothing special need be said about etching, but as photo lithographs are always full of fine details, I prefer to etch in relief.

Transferring upon Zinc for High Relief Etching.

1. *Dusting—in the Copy.*—Ten parts of Syrian asphaltum and one part of pure beeswax are melted together, and after having cooled reduced to the finest possible powder. With this powder sifted well before every operation, the perfectly dry copy is copiously dusted and the surplus brushed off with a tuft of cotton.

Copies not uniformly inked up will now reveal all possible imperfections. They should be at once refused.

After dusting the copy is warmed slightly over the flame of an alcohol lamp, and face down. The powder assumes a darker color when heated and turns slightly glossy. By melting, the powder combines with the surface of the ink, leaving the ground beneath intact, a condition to perfect transferring. Copies may be kept at this state for a long time.

They are afterwards passed slowly through a saturated solution of alum, well washed in pure water, and to moisten them thoroughly placed between damp blotters.

The Transfer.

One of the greatest advantages of my method is the possibility to transfer upon a large plate and by one operation any number of small copies. Moreover have we here but perfect prints to deal with, all those showing faults in previous work having been set aside.

When printing directly from several negatives by one operation, over and under-exposures will naturally occur, some prints may not be sharp, or be faultly otherwise. If we furthermore take into consideration that dusted-in copies are nearly or quite as sharp as those printed direct, we are induced to disard direct printing altogether.

After thorough moistening of the copy, in damp blotting paper the zinc plate intended to be etched in high relief is warmed to about 40 deg. R. = 120 deg. F., the copy is placed upon it, smoothed out and passed through the press first by slight and subsequently by increased pressure.

With cylinder presses, copy and plate should be covered with a piece of soft felt.

When the pressure has been found to be sufficiently high, the back of the copy is moistened with sponge and cold, clear water, the plate warmed again, passed through the press once or twice and placed in a tray with cold water. In one or two minutes the copy may be stripped and if all previous operations have been done correctly, none at all or but a trace of ink will remain. The plate is of sufficient intensity and after edging and backing up, may at once be etched.

Is the transfer blurred there has either been too much ink on the copy, or the tension of the press has been excessive in first passing through.

Blurring occurs when the cylinder presses first upon the plate, and it is therefore advisable to leave margin enough on the plate. But if ink and asphaltum do not come off well, or adhered to parts or spots, the plate has not been warm enough, the ink was too hard or there was not enough of it. The same may be produced by heating ink and asphaltum excessively.

By transferring upon a lithographic stone, the proceeding is similar. In summer time the stone may be heated sufficiently by just setting it in the sun. Their zinc plates to be printed from on the lithographic press require support, a stone or other suitable object.

Practitioners will most certainly succeed well with my method.

Beginners or the less experienced should not be discouraged by a few mishaps, it is the best method of making transfers and equals direct printing if it is not superior.

Inquiries referring to difficulties encountered in the practice of my method, I will be pleased to answer conscientiously and as detailed as the limited space of a letter permits.

A. Albert.

HOW I MAKE LANTERN-SLIDES.

In the first place I wish to define my position as it may stand related to what I have to say on the subject of this paper. I wish it understood that I am simply relating *my* methods, making no claim of superiority over others. I am familiar with the *fact* that a given formula for almost any photographic work will not produce uniform results in the hands of different operators. The question *why*, is an interesting one, but cannot be discussed at this time as it would furnish material alone for a lengthy article; it therefore must suffice to simply note the fact as a reason why it is not expected that every one who attempts to try my way will succeed in obtaining the same results. In The Photographic Times of December 23, 1892, was published a paper which I read before the "Photographic Section of the American Institute," which I illustrated with seventy slides made in the way I am about to describe, and the unanimous verdict of those who heard the paper and saw the illustrations was that my position was correct, and the illustrations were superior to the generally accepted slide, inasmuch as they gave artistic effects. I refer to this as presenting sufficient evidence that I work my way successfully whatever may be the result in the hands of others.

The first thing to be observed in the production of a lantern-slide is cleanliness. So many otherwise good slides are ruined by appearing on the screen as if a pepper box had been partially emptied

over either the negative or slide when wet, so the first thing to do is to see that the negative from which a slide is to be made is perfectly clean ; if the negative is not clean and cannot be made so, do not use it. Use only clean negatives.

The next most important element in this class of work, as well as in all photographic manipulation requiring development is the *developer*. For several years I have been using caustic alkalies in most of my experiments. After introducing to the photographic fraternity the carbonates of soda and potash as a substitute for ammonia, I turned my attention to experimenting with caustic alkalies, and published some results in the "International Annual" for the year 1888. In that article I gave an account of some experiments obtained with lime water. About two years after this publication my attention was called to the saccherate of lime by Mr. Easterbrook, I think it was, who had a formula for its use printed on a card, one of which he gave me,but which I lost before I had tried it. I mention this because if the formula which I have worked out is in the main like the one he gave me he will be entitled to the credit if any is due. Suffice it to say, that I have used the saccherate of lime mainly for the last two years, both for negatives and positives.

My way of preparing it is to put into 1 gallon of water 1 pound of granulated sugar; when this is dissolved it is used to slack a quantity of quick lime.

2 or 3 pounds will be more than will be dissolved. When the water has become saturated you will have about 5 pints of the solution, which should show about 62 grains to the ounce by the hydrometer.

Allowing 8 grains for the sugar you have remaining 54 grains of lime to the ounce, which is about four times the quantity in ordinary lime water; this, however, reduced to less than 15 grains to the ounce is much more energetic than plain lime water. This solution is slightly colored by the heat evolved in its production on the sugar, and should be about the color of pale sherry.

How to use this solution to prepare a developer will depend upon what effect you wish to produce, whether it be a negative or positive, or whether the plate to be used is very sensitive or the opposite; and whether the exposure will be instantaneous or time.

For the development of a lantern-slide on a very sensitive plate I use 1 ounce of the lime solution and 3 ounces of water, dissolve in this 20 grains to the ounce of glucose or in other words grape sugar, the most convenient form in which it can be found is in any candy shop by the name of rock candy. Maple sugar will answer, or 20 minims of honey, whether natural or artificial. The addition of grape sugar renders the use of a bromide unnecessary and assists in producing intensity, which is more difficult on a very sensitive plate than on a slow and specially prepared plate. The next thing to add is sulphite of soda, 15 grains to the ounce. This will cause a little reaction by converting some of the lime into an insoluble sulphite which will give the solution a milky appearance; it will soon settle, however, and leave the solution clear. You need not wait for this, however, as it exerts no injurious effect on the plate. When the sulphite is dissolved, add 4 grains of hydroquinone. When this is dissolved this developer is ready for use.

It can be used repeatedly until all used up. If any is left over, do not return to the bottle containing that which has not been used, but put it into a bottle especially for old developer. By constant use it becomes charged with the bromide released by the decomposition of bromide of silver in the sensitive film and becomes slower in its action, but will develop just the same if about double the time of exposure is given. A little fresh developer added restores its activity. I have made beautiful negatives with the old after standing all winter in the cellar of my country home.

For landscape and general out-of-door work, 2 grains of hydroquinone is all that is necessary, and for a specially prepared plate for lantern-slides 1 or $1\frac{1}{2}$ grains will be found sufficient.

My comparative experiments with amido are incomplete, the most serious charge I have against amido as compared with hydroquinone in the form in which I use it, is that it lacks the keeping qualities of the latter. The best results of my experiments as far as keeping qualities are concerned, are as follows :

Water	1 ounce
Rock candy	20 grains
Sulphite of soda	20 grains

I would say here that I use the granulated sulsulphite and my samples are quite alkaline. To neutralize the alkaline property in 20 grains, I use 5 minims of formic acid ; then add 2 grains of amidol and it is ready for use and is a powerful developer. This is the only form of amidol that I have tried where a bromide was not necessary. As soon as the weather will permit I shall give it the final comparative test by instantaneous exposure. This developer will produce beautiful lantern-slides. I apprehend however if a trial should be made the next day, with the developer which had been used the day before, that

the hydroquinone would prove victorious. In developing a lantern-slide on a very sensitive plate the developer should be constituted so as to produce the necessary density in the least posssible time.

In slacking quick-lime the product is in fact calsium hydrate. I have tried various quantities of sugar in given quantities of water and have evaporated these solutions to dryness, forming salts, which being disolved in water, formed, when treated as above described, the same developer and as effective. In this form it becomes a commercial article, and I am informed that this salt is for sale by a wholesale druggist on Third avenue. In one experiment in making saccherate of lime I used rock candy, 1 pound to 1 gallon of water, and from the comparative tests so far made am inclined to give it the preference over cane sugar. It frequently happens that a slide, or a negative when completed, is not as intense as might be desired.

With me it is the exception that I do not strengthen a negative or positive and may sometimes reduce them ; my method of intensifying I published many years since, but on account of the prejudice against the use of mercury and a misapprehension of the chemical nature of the iodide of mercury some chemists discouraged its use. It is prepared by disvolving in 10 ounces of water, 60 grains of mercury bichloride ; in another 10 ounces of water dissolve 180 grains of iodide of potash or 175 grains of iodide of ammonia, whichever may be most convenient.

When dissolved pour the iodide solution into the mercury solution. The iodide of mercury will immediately be precipitated in the form of a red powder. This is iodide of mercury and is soluble in hyposulphate of soda and by some has been recommended in such solution, but if used in this form will, in time, destroy the negative treated with it. The iodide of mercury is also soluble in a solution of either the iodide of ammonia or potash and the formula which I have given contains sufficient iodide to dissolve all of the iodide of mercury formed, and leave a small amount of iodide in excess.

In this form it is ready for use and will keep indefinitely, and as only the mercury is taken up in the process of strengthening, the proper equilibrium can be restored at any time by keeping a saturated solution of the mercury salt always on hand. When the mercury becomes depleted, which will be indicated by its working slow and weak, add a small quantity of the solution of mercurial chloride, and the red iodide formed will soon be dissolved by the excess of iodide. If by putting in too much of the mercury more of the iodide of mercury is formed than can be dissolved, add crystals of some iodide sufficient to make the solution clear. A plate should not be put into the solution while any of the iodide of murcury remains undissolved as it would fill it with pin-holes.

The negative to be strengthened should be thoroughly fixed and dried. The action is quite rapid and care must be taken not to get too much intensity ; if, however, you should, the ordinary reducing agents will act as on ordinary negatives. In the process of strengthening a gelatine plate in this solution some iodide of mercury combines with the gelatine and cannot be washed out. You can determine this by washing a plate after strengthening and letting it lay for half an hour in a dish of clean water ; in this time the plate will have turned to an orange color by reflected light ; by this it becomes apparent that this must be fixed out, but *this* iodide of mercury is not soluble in an iodide solution of ammonia or potash, but is instantly dissolved in a solution of hypo and therefore should always be fixed in hypo for at least thirty seconds. As the plate has been dried and is hard the hypo does not penetrate the film and can be washed off in a few minutes under the tap. A plate so strengthened is, in my opinion, absolutely permanent. I can show many plates as old as the gelatine process, and some from which several hundred prints have been made without any signs of change or deteriation. Some of the leading professional photographers of this town to whom I have given it have used it for years and would not be without it. To produce a superlative negative or positive, the force of the developer used must correspond *exactly* to the needs of the exposed plate. My method of making a negative from a time exposure is to expose the plate double the time necessary for a new developer, and commence with my old developer. I have another graduate glass with old developer containing a small quantity of new developer. What I mean by new is that which has not been used, and another glass containing new developer, thus equipped I feel my way until I determine just the requirements of the exposure. In this way I am always sure with a good plate to secure a negative as near perfect as possible under the circumstances.

Henry J. Newton.

SUITED.

"I'm a professional pedestrian—what sort of photograph would you recommend?"

"Have them taken promenade style."

ON THE COMPARATIVE ADVANTAGES OF THE WIDE-ANGLE AND TELE-PHOTOGRAPHIC LENSES.

[South London Photographic Society.]

In your invitation to read a paper on some optical subject, you have been good enough to select a title for me. I shall approach the subject chiefly from the side of the "man of measurement," for adequate criticism of photographic representation by optical means requires the combination of an exhaustive study of the physiology of "vision" and the recommendations of a mature student in pictorial art.

As I understand, the two main branches of photography are mathematical exactness on the one hand, and on the other such artistic skill applied to the representation of the subject as the instruments and methods we have at our disposel will allow; the first a scientific record, and the second an attempt to make such objects and scenes in nature that we wish to reproduce "*look right*," to use an artist's phrase.

What Wide-Angle and Tele-Photographic Lenses Depict.

Carried to extremes, neither photographs taken by wide-angle lenses nor by tele-photographic lenses depict actually what is *seen*. The wide-angle lens forces the perspective to such an extent that a "den" may be made to look palatial in its proportions, nnd tele-photographic images may be made, large and clearly defined, of objects situated at such distances that the details shown in them would be quite invisible to the naked eye.

On the subject of the first branch, viz.: scientific photography, provided both types of lens are non-distorting, the drawing given by them is in exact accordance to the laws of monocular perspective, and being due solely to the fixed point of sight for the time being. The tele-photographic lens has a very pronounced advantage in being able te record that which could not be seen without recourse to the telescopic aid, and the wide-angle lens has its own scientific value in that it can record in one view a greater amount of subject, so much so that from one standpoint the whole horison may be recorded in three views, in other words, taking in as much as 120 deg. in each operation.

When we come to the consideration of instrumental aids to pictorial photography, or our endeavor to make a picture *look right*, our object lies in the direction of seeing how nearly we can approach to a parallelism to visual impressions. I have thought it might be of interest to you if we were to go through such laws in connection with the subject of "sight" as might assist us in an analysis of the best instrumental means to adopt in order to keep our representation as much in touch with these laws as possible, for the subject before us is really one involving in a great measure the science of perspective.

The Law of Visible Direction.

Knowing that the images on the retina of the eye are inverted, it is interesting to ask, first, how it is that we have erect vision. The question would appear to have puzzled metaphysicians; the scientific answer as explained by Le Conte, Helmholtz, and others (Le Conte is most familiar to me, and I have frequently drawn from him), is found in what is known as the "law of visible direction," and is stated thus: "When the rays from any radiant strike the retina, the impression if referred back along the ray line (central ray of the pencil) into space, and therefore to its proper place." Points in the horizon are referred back in a straight line to the horizon, radiants above the horizon impress the lower half of the retina and are referred upward again, and points below the horizon on the ground impress the upper half of the retina, and are therefore referred downward. Thus every impression on the retina reaching it by a ray line through the nodal point is referred back along the same ray line to its true place in space, so that we may say that space in front of us is under all circumstances the outward projection of retinal states. If we compare the properties of other senses, we shall find a complete analogy; if we receive a blow in the front part of the body and were not even to perceive the impact of the blow, our senses would enable us to infer very distinctly the direction from which the impact came. It thus appears difficult to comprehend that the retinal images should be other than inverted, as also that their projection could give us other than erect images. In the photographic camera we have thus far a very close analogy; it is comple as regards the inverted image, and the possible transmission back again into space by "the law of direction," as also by the "law of conjugate foci," by which points in the image and object are always interchangeable. In the ordinary camera we can, of course, only compare its visual rendering with that of monocular perspective. Stereoscopic views seen through the stereoscope complete an *illusion* that is dependent on the fulfilment of another law, known as the "law of corresponding points." From this law proceed all the phenomena of *binocular* vision, with which, however, we are

not concerned this evening. From the "law of direction" proceed all the phenomena of *monocular* vision, and we will proceed to examine the different forms of perspective included in monocular vision that enables us to judge of the relative sizes, distances, etc., of objects in the field of view.

DIFFERENT FORMS OF PERSPECTIVE.

There are three, viz., Aerial, Mathematical, and Monocular, or Focal Perspective. The fourth, and only other form, binocular perspective, is not capable of representation on a plane surface either by the painter-artist or photographer. Before dismissing this form of perspective, however, it may be worth while noticing its bearing on the "focus" question. By binocular vision we gather up all the distinct impressions in what is called the "deep" field, by running the point of optic convergence back and forth, and thus gather up all the distinct impressions into one mental image. From the fact that we can utilize this power in the same manner, with either monocular or binocular vision, in sweeping the point of sight laterally over a "wide" field, and collect a distinct impression of the scene, some writers on photography have contended for universal sharpness, or, at any rate, uniform treatment in respect of the quality of definition throughout photographic representations. Other writers, following on the lines first laid down by Dr. Emerson, have maintained that that portion of the photographic picture which in nature was of chief interest, and when looked at exercised a particular optical convergence of the eyes, should be emphasized by better definition than the remaining portion of the picture. As a matter of fact, outside the small area of distinct binocular vision, all objects in the "deep" field are duplicated, either harmoniously or heteronomously, and are therefore indistinct, but cannot be exactly represented on a plane surface. It seems to me that Dr. Emerson's plan contributes, in no small degree, to a more complete illusion optically.

To return to the first three forms of perspective:—

AERIAL PERSPECTIVE.

1. *Aerial Perspective.*—"The atmosphere is neither perfectly transparent nor perfectly colorless. More and more distant objects being seen through greater and greater depths of this medium become, therefore, dimmer and dimmer, and bluer and bluer. We judge of distance in this way; and if the air be more than usually clear, or more than usually obscure, we may misjudge" (Le Conte). Most of us have probably observed for ourselves that in foggy and hazy weather objects look larger, and we are very apt to over-estimate distance. A train or vehicle coming towards one in a fog is very likely to be almost upon us before we are aware of its proximity, due to this illusion. On the other hand, the undoubted testimony of all mountain-climbers is, that they misjudge distance in the opposite direction in very clear atmosphere, as, for instance, a mountain top, that may appear to be only, say, two or three miles off, generally turns out to be ten or twelve. Aerial perspective is of little importance when employing wide-angle lenzes of short foci, as experience has taught photographers the insignificant rendering they give to distance, and, in fact, such lenses are best dispensed with except in confined situations, when aerial perspective is not appreciable. In tele-photography, on the other hand, it is of great importance, not only in the judgment of distance, but also for the quality of definition attainable.

No matter what lens be employed to attain good definition of distance, the clearer the air the better the result; but, as before stated, in tele-photography, one can record on the photographic plate, no matter what the conditions of atmosphere may be, considerably more than the unaided eye can perceive. Furthermore, it is quite beyond dispute that small images produced by ordinary aplanatic lenses on the sensitive film, and subsequently enlarged to dimensions equal to those produced by direct photograpny, will bear no comparison whatever as regards definition. The comparative proofs I hand you were taken by Col. Colville on Wimbledon Common in hazy weather. He was working in conjunction with Captain Simpson, of the Intelligence Department of the War Office, and the results will speak for themselves. You will note that the enlargement from the ordinary sharp-looking negative has not a vestige of definition at all. I am indebted to Capt. Simpson for the loan of the negatives from which Mr. Bridge has prepared the comparative lantern-slides I show you. They exhibit the manner in which tele-photography can analyze an ordinary view. If a tele-photographic lens be used at a very short distance from the photographic plate producing an image of the same size as that of an ordinary lens of considerable length of focus, the definition is practically identical. It should favor the long-focus lens from the fact that this is easier to construct on optical grounds, but, with a finely finished and corrected positive element for the tele-photographic lens, I have failed to find a difference as against ordinary lenses, with equal intensities, up to forty-eight inch focus. An ordinary lens of *twenty-five*

feet focus would be required to attain the dimensions of Boissonas's *Mont Blanc*, exhibited at Pall Mall. I cannot say whether an ordinary lens of such a focus would have given better definition. The experiment is hardly likely to be tried.

T. R. Dallmeyer.

(*To be continued.*)

PHOTOGRAPHY IN ITS RELATION TO THE ART OF PRINTING.

(*Continued from page* 129.)

Introduction of Printing into England.

The introduction of the art of printing into England has generally been assigned to William Caxton. He commenced printing in the year 1474, and found a patron in Mulling, Abbot of Westminster, afterwards Bishop of Hereford, who gave him an old chapel in the Abbey for a printing-office. The spot now forms part of the site of Henry VII.'s Chapel. The first book printed by Caxton was a 'Book of Chess," a title which sufficiently describes the nature of the work.

In 1483 there were only four presses in England—Caxton's, at Westminster; Rood & Hunt's, at Oxford; De Machlinia's, in London; and a fourth (name of the printer unknown) at the Benedictine Monastery at St. Albans. Caxton, however, seems to have been the greatest printer of his time.

Caxton died about the year 1491, and was succeeded in his business by Wynkyn de Worde and Richard Pynsent. The first, a most accomplished man, accompanied Caxton from the Continent. He introduced the Roman letter into England, and the shape of his types was used for two centuries afterwards. The punches and matrices he used in casting his types were in existence as late as 1758. The art of printing spread throughout Britain as the years rolled on. It seems pretty certain that it was not before 1480, at the earliest, that Oxford had its own printers; while the first printer in Cambridge was John Sibert, whose productions in Latin, Greek, and English bear no earlier date than 1521.

It is not necessary to follow the art as it spread gradually throughout the kingdom during the next and following centuries.

The Art of Photography.

If time permitted us to follow closely the various discoveries connected with the art of photography, I suppose we might go back to the period when the knowledge of the action of light was known to the Egyptians.

The discovery of the "camera-obscura" (darkened chamber) may, however, serve very well for a starting point.

Giambattista della Porta, a Neapolitan, had noticed that external objects were reflected on the wall of a darkened room when the light was admitted through a small aperture. Following up the inquiry thus opened to him, he contrived the fitting of a lens in a movable box, and in this way produced the instrument which has suggested greater things, and which to the draughtsman and photographer is invaluable.

The action of light on chloride of silver was known as early as the sixteenth century, and the phenomenon was studied by early experimentalists whose names will occur to you—Scheele (1777), Genebier (1790), Ritter and Wallaston (1801).

From the results of these investigations experiments were made by Thomas Wedgwood and Humphrey Davy in the Royal Institution, London, which were published in its Journal, 1802. Wedgwood, who was the fourth son of the great potter, may be regarded as the first photographer. He discovered a method of copying paintings on glass by placing beneath a white paper covered with a solution of silver nitrate, and exposing to the action of solar light. He could not, however, fix the images. But in 1814, M. Niépce discovered a method of producing, by means of the camera-obscura, pictures on metal plates (coated with bitumen), at the same time rendering them permanent.

Another name will suggest itself to many—M. Daguerre. He commenced experiments in 1824, and two years later joined Niépce, and worked with him till the death of the latter in 1833.

In 1839, Henry Fox Talbot first published his mode of multiplying photographic impressions by producing a negative photograph (*i.e.*, with the light and shades reversed), and from which any number of positive copies may be obtained.

Photo-Zincography and Photography on Wood.

I think the earliest application of the art of photography to that of printing is the discovery of photo-zincography in the year 1860.

This is a process by which photographs are transferred to zinc plates, which may be printed from.

It was invented by M. Toowey, and perfected by Sir Henry James, Chief of the Ordnance Survey, and made known at the date already mentioned. Charts, maps, and engravings can be printed in this way at small cost. The adoption of the process by the Ordnance Survey Office has resulted in the saving of expense to the Government.

It was not till 1861 that photography was successfully applied to the transfer of works of art to wood blocks. This was accomplished by Mr. John Leighton in his illustrated edition of the *Lyra Germanica*. I have here wood blocks of two subjects showing the image photographed on the wood. The process is of much importance, as the original drawing is preserved, not only for comparison into the finished engraving, but it may be for its artistic value. The drawing also may be of any convenient size, and reduced on wood; a great consideration when minute objects are to be represented.

After the photographing on to the wood is done, the picture is "lined up" if necessary, and more clearly defined by the aid of the pencil and Chinese white. This is not always done to aid the engraver, as a skilled engraver prefers to intepret the drawing in his own way without aid, even though the photo on wood be indistinct; but it is very often important that the subject should be clearly defined, so that the person to whom it is submitted for approval may judge of the correctness and suitability of the block for his purpose.

Photo Blocks.

Photography itself, as a science, has advanced very rap-

idly, even within the last few years. Discoveries are constantly being made of more or less merit, and makers of apparatus are ever ready with something new. But, apart from this, during the last decade photography has entered very largely into the ordinary commercial undertakings where printing is employed. The art of making blocks with the aid of photography, for the purposes of illustrating forms at the present day, is a flourishing industry. Whilst admitting the beauty of a really good wood engraving, it must be granted that for truthfulness and delicacy nothing can excel a good zinco block for use with letter-press; and it has this further merit, that the cost is considerably below that of wood engraving.

Of course, artistic taste and great skill and care in manipulation are required to produce a beautiful illustration, though it is often the case that the choice of picture is with some one who is unacquainted with the requirements of the half-tone process, as it is termed. The beauty of execution in the block is due to the zincographer; but photographers also have a great deal to learn as to the requirements of the half-tone process, in order to insure a really good block. This will account for the great differences in the appearances of some blocks in illustrated magazines and papers.

It is impossible to produce a good block from a negative or a print which does not lend itself to the process; and it is equally impossible for the printer "to make anything," as the phrase goes, from some blocks that are produced, owing to want of depth and other circumstances. Sometimes, however, by force of circumstances, it is really impossible to obtain a good negative or photograph to illustrate a given subject—a fact which will serve to explain, in a degree, the great variety in the quality of the block produced and printed.

There are, as you know, various methods of illustrating the text of any given work, more or less elaborate and more or less expensive in execution. For example, there are lithographs, where many colors are used; or many colored prints from a series of wood blocks or zincos carefully registered, *i.e.*, so made that each color will fall exactly where required. Photography is largely employed for the production of these pictures, or in lithography to ensure accuracy of outline, or for the sake of exactly reproducing stains of age, or usage, or imperfections in old documents, or parchments, or other subjects of antiquity.

Direct Photo Processes.

Then, again, there are the various and beautiful photographic processes and prints, printed direct on the paper which is to form the leaf of the book; or a photograph may itself be mounted on to the leaf of the book, to form an "insert" or frontispiece.

Of the methods I have already mentioned, I suppose that collotype, authotype, or Woodbury-type, would be the best forms of illustration for certain subjects for commercial purposes, as they most closely represent actual photographs. Collotype is described to me as bichromatized gelatine spread upon glass and printed beneath a negative, then washed out and used as a printing block in specially constructed presses or machines. The gelatine, I believe, is effected a great deal by the weather, and I am told that there is difficulty in obtaining two impressions alike; but I have no doubt, in the hands of the experienced collotype printers of the present day, these difficulties will soon be overcome, and it certainly is to their great credit that such good work is turned out in spite of the drawbacks mentioned. Collotype, too, has one distinctive and attractive merit besides beauty, and this is economy in the cost of production. But I must not, even if I could do so, dilate further upon the subject, as by the kindness of one of our members, I believe, we are to be favored shortly by a demonstration at his works.

It was rather my wish to bring before you this evening examples of the employment of photography in helping the printer to produce an illustration at once effective and economical. For our purpose, then, we can divide the term printing into two main divisions, lithographic and letterpress printing.

Photo-Lithography.

In the first of those, then, photography can be employed to produce a subject or design upon a lithographic stone, ready for printing purposes, in much less time and with greater faithfulness than can be secured at the hands of an average lithographic draughtsman.

Take for example a white lace curtain or piece of lace. It is required to show effectively the design of the curtain. This must at least incorporate a corner—most generally half a curtain is preferred. Now, it is quite obvious that to secure the print which you see (*specimens shown*), it would take a draughtsman a long while to complete his work, and it would of necessity be very costly; so the end is achieved by means of what is called the photo-transfer process. An ordinary wet-plate negative is taken, and a print obtained on paper coated with bichromatized gelatine. This receives a coating of lithographic transfer ink specially prepared for the purpose. It is next floated in warm water till the lines are seen as depressions. With the aid of a sponge and water, the soluble portion (or white) is removed, leaving the picture in insoluble gelatine with its coating of transfer ink. It now only requires to be dried and transferred to the stone for printing in the usual way.

In printing the illustrations for a catalogue or book, the letter-press, or type portion, can, if necessary, be transferred to stone in much the same way by "transfers" being pulled on transfer paper, and the whole "laid down" and printed at one and the same time.

Photo-relief etching is a term applied to a picture in relief on metal, which can be used like a wood-cut in the ordinary printing press.

Reproductions of Line Drawings.

Photography is very generally employed in the production of line drawings. To produce blocks of these for the purpose of letter-press printing the image must be produced on zinc from a reversed wet-plate negative, giving, of course, a positive upon the zinc, but the reverse way to the drawing. The mechanical tint, or stipple, is added afterwards if required. The plate is now rolled up, and slightly warmed before placing in the acid bath or etching solution. It is then well rinsed under the tap, and dried with gentle heat upon a hot plate, and gummed in. After it has been allowed to cool, the gum is removed with a sponge. The plate is again "rolled up," and the surface coated with powdered resin and again subjected to the etching solution. The operation of "rolling up," warming down, dusting with resin to protect

the sides of the lines, is repeated until the plate attains sufficient depth. The whole of the resin is then washed off, and the removal of the "steps," or shoulder, is effected by a series of acid baths in muca the same way as the depth is attained, with the exception that the resin is omitted.

J. H. Alabaster.

(*To be continued.*)

Notes and News.

W. P. Buchanan's Gold Prizes.—No. 78, $25; E. L. Carolus, Philadelphia. No. 405, $15; J. L. J. Haggstrom, New York City. No. 463, $10; W. F. Grubb, West Chester, Pa.

Committee—Edward Sterling, *Public Ledger;* J. J. Sheets, Demonstrator for G. Cramer, D. P. W.; W. W. Kerst, Salesman.

Kolumbus Kodaks.—The Eastman Kodak Co. are about to issue a small brochure which will briefly describe the reasons why visitors to the World's Fair should take a Kodak with them. The little pamphlet will be entitled "Kolumbus Kodaks."

Correspondence.

SHUTTER SPEED.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I do not wish to appear hypercritical, but being especially interested in instantaneous photography my attention was naturally attracted by Mr. English's description of his two pictures of bicycle races in your issue of March 3d, and I have studied the same carefully. As a result, I am led to think that Mr. English is mistaken in his estimate of the speed of his shutter. Let us take the small picture, "Quarter Mile Flying Start," and make a rough calculation. Zimmerman, who figures in the second photograph, has made a quarter of a mile, with a flying start, in 27 seconds. As the men in this picture are doing their "level best," it is not unreasonable to assume that they were going as rapidly as a quarter of a mile in 31 to 32 seconds, which is at the rate of about 42 feet in a second. Mr. English says that the riders were 30 feet distant from a 10-inch lens, distances that are to each other as 36 is to 1. Hence, if the bicyclist moved 42 feet in a second, his image on the ground-glass would move one thirty-sixth of that distance in the same length of time, or 14 inches. Fourteen inches in a second would be 7 inches in a half second, and so on, until we come to .05 of an inch in 1/256 of a second, which is a much more rapid exposure than Mr. English's, which he computes at 1/200 of a second. Now the question is: Is a movement of .05, or 1/20 of an inch sufficient to cause a blur? I am very much inclined to think it is, and so, apparently, is Mr. A. C. Longden, who, in "The Times Annual" for 1892, gives 1/100 of an inch as the greatest movement permissible if a sharp picture is desired.

Therefore, I repeat that I think Mr. English must have vastly underestimated the speed of his shutter. I should like to hear from him again on the subject, for I have failed to get sharp photos of objects that were not apparently moving as rapidly as these bicycle riders, with a shutter *claiming* to work three or four times as swiftly as his. Respectfully,

Val. W. Starnes.

Summerville Delivery, Augusta, Ga.
March 5, 1893.

Photographic Societies.

AWARDS AT THE EXHIBITION OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

JUDGES.—Messrs. Robert S. Redfield, Philadelphia; James L. Bruse, New York; Alexander Black, Brooklyn.

LANDSCAPE AND MARINE.—Gilt: R. L. Bracklow. Silver: W. B. Post, A. Stieglitz. Bronze: E. D. Bellows, J. S. Jacobus, A. P. Schoen.

FIGURE STUDIES (including portraits).—Gilt: A. Stieglitz. Silver: E. S. Bennett. Bronze: W. B. Post, Dr. Edw. Leaming.

ARCHITECTURE AND INTERIORS.—Silver: W. B. Post. Bronze: Dr. Edw. Leaming, A. L. Simpson.

HAND CAMERA WORK.—Gilt: W. B. Post. Silver: Jas. H. Stebbins, Jr., Richard H. Lawrence. Bronze: A. L. Simpson, Earnest Warrin.

SCIENTIFIC.—Silver: Dr. Edw. Leaming.

BEST ENTIRE EXHIBIT.—First: *A. Stieglitz (*hors concours*). Second: W. B. Post.

BEST ENTIRE EXHIBIT FOR MEMBERS WHO HAVE NEVER RECEIVED A PRIZE.—Silver: Dr. Edw. Leaming.

LANTERN SLIDES AND TRANSPARENCIES.—Silver: Miss E. V. Clarkson. Bronze: W. B. Post.

LOWELL CAMERA CLUB.

AT the annual meeting of the Lowell Camera Club held March 7th, the following officers were elected: President, Paul Butler; Vice-Presidents, W. P. Atwood, W. E. Badger; Treasurer, M. A. Taylor; Secretary, George A. Nelson; Directors, Geo. H. Stevens, Frederick T. Walsh, Charles Runels; Membership Committee, A. S. Guild, J. C. Wadleigh, Philip R. Hovey, Arthur Staples, William Corner.

Room rules were adopted, and the matter of uniting with the New England Camera Clubs in an exchange of photographs was left with the Executive Committee.

On the previous evening the slides of the New Britain Camera Club and the Waterbury Photographic Society were shown to a large audience. There were also exhibited fifty very interesting slides, loaned by Hon. Chas. H. Allen, a club member. These included views in the Yellowstone National Park, views of several of the important Pueblos in New Mexico, some typical Indians and pictures illustrating their habits of life.

The quality of the slides in both the Exchange sets was excellent, but like nearly all the sets contributed to the New England Lantern-Slide Exchange the present season, they lacked a suitable descriptive text of the pictures. It is to be hoped that next year this rule of the Exchange will be more fully complied with.

Yours very truly,

George A. Nelson,
Secretary.

* Mr. Stieglitz having offered these special prizes was ineligible.

The Editorial Table.

Anleitung zur Photographie fur Anfanger, von G. Pizzighelli. Fifth Edition. Wilhelm Knapp, Halle a/S. publisher.

This little hand-book, known to Germans as "Der Kleine Pizzighelli," and now appearing in an improved and augmented edition is, notwithstanding its name, a great book.

In the fifth edition, now before us, the learned and experienced author has abstained from dwelling upon old methods and formulas, but has substituted for them the newest things in the practice of photography. The book is mainly written for amateurs' use, but is highly instructive and interesting to the professional as well.

George Macdonald, the Scotch novelist, is presented to the readers of March *Book News* (Phila.) as the frontispiece portrait. Dr. Macdonald is as benevolent and as kindly-faced as his many readers might expect to find him, for his writings show him to be sincere and straightforward, and moreover he is a good story-teller.

Not Photogravures.—The March number of our esteemed contemporary, *Tho Photo American*, announces on its cover that it is "illustrated by the photogravure process," though we fail to find a single photogravure in the entire number. The pictures are from very attractive negatives, but are all by the half-tone or kindred processes.

Not its First Appearance.—*The Cosmopolitan* for March contains an interesting article by Clarence B. Moore on "Women Experts in Photography." It is illustrated by excellent reproductions from photographs by Mrs. Bartlett, Miss Clarkson, Miss Farnsworth, Miss Johnson, Mrs. Wright, Miss Slade and Miss Needles. The frontispiece of the number is the figure picture entitled "Sunday Morning," by Mrs. Wright, which originally appeared in the Christmas number of THE PHOTOGRAPHIC TIMES of last year.

Queen & Co., incorporated, successors to the well-known firm of James W. Queen & Co., which was established in 1853, continues the business of this reliable old firm at 1010 Chestnut Street, Philadelphia. Mr. S. L. Fox is president of the corporation, E. B. Fox, vice-president, and F. W. Stanwood, secretary and treasurer. The company continues to deal in the same reliable goods which have made the name of "QUEEN" so favorably known throughout the entire country. Beside various photographic goods the company deals in general scientific instruments, including optical, engineering, and astronomical instruments, microscopes, and supplies, drawing instruments, meteorological instruments and other instruments of precision. Their extensive factories are in Philadelphia and Ardmore.

THEN HE KNEW.

"Just photograph me with a knowing look on my face, will you?"

"Good, just keep in mind that my price is $8 a dozen, half cash in advance and I'll go right ahead and point the camera at you!"

Acquaintance: "Ye-es. Very nice photograph of your wife—only-er-there's no nose, and the two eyes have got blurred into one, and the chin and hair seems to be-er-smudged into the background, and one ear's gone, and—"

Amateur Photographer: "Er-hum-yes. It's an impressionist photograph, you know."—*Pick-me-up.*

Queries and Answers.

42 L. P. H.—Will you kindly inform me where the Rodenstock bistigmatic lenses are procured?

42 *Answer.*—Die Rodenstock Fabrik Optischer Gegenstände, München, Germany. There is no agency in this country as yet.

43 ESCANABA.—Can you give me through your columns a formula for gelatine emulsion for plates as rapid as 26 or 26x?

43 *Answer.*—Read "Photography with Emulsion," by Capt. W. de W. Abney; "Dry-Plate Making," by Dr. Geo. S. Sinclair, and the chapter on the subject in "The Photographic Instructor"—all of which books are published by The Scovill & Adams Co. They will give you sufficient information to do the work.

44 SALEM, MASS.—1. What would you recommend as the best low-priced book, giving instructions, etc., concerning the "optical lantern?"

2. Do you think slides made in the camera better than by contact?

3. And is not the *dry* plate sufficiently good for ordinary work?

44 *Answer.*—1. "The Optical Lantern," by A. Pringle. The Scovill & Adams Co., publishers.

2. Camera-made slides are always better.

3. Dry lantern plates are now made of excellent quality, and have superseded the wet plate almost entirely.

45 AUBURN.—1. Will you please advise us in what publication we can find the latest and best processes for photo enlargement?

2. Is there any work devoted to this particular branch of photography? Kindly add the information as to where the publications may be obtained and the price.

45 *Answer.*—1. You do not state distinctly by what process you intend to enlarge. If by the bromide, evidently the most popular, we advise you to read "Bromide Paper and How to Use It," price 25 cents; or the chapter on the subject in "The Photographic Instructor," 4th Edition, price $1.50.

2. If by the solar camera with printing out or by development, we refer you to Dr. E. L. Wilson's "Photographics," $4.

46 W. D. P.—I have purchased one of your "Photographic Times Annual" and in it I saw a toning formula called "Liesegang's toning bath for aristotypes," No. 96. Will you please write and inform me how to use it, as there are no directions in the book.

46 *Answer.*—Prepare *A* and *B* separately and mix. Wash the prints before toning, wash again, and fix in the usual hypo bath.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
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Commercial Intelligence.

SOLD OUT! SOLD OUT!

THE publishers of "The American Annual of Photography and Photographic Times Almanac" for 1893, beg to announce that the entire edition consisting of over 18,000 copies has been exhausted, and that they are unable to fill further trade orders.

They offer to announce in these columns without charge, the name and address of any dealer who may still have a few copies for sale. They request that such dealers will kindly notify them at once, as they are constantly receiving requests for the "Annuals" which they cannot fill and they wish so far as possible to facilitate the means by which every one who desires a copy of the book may obtain it.

WHERE YOU CAN OBTAIN THE AMERICAN ANNUAL FOR 1893.

Griffen & Bolwell, of Scranton, Pa., have a few copies yet unsold.

A. M. Knowlson, Troy, N. Y., reports a number of copies of "The American Annual" for 1893 still on hand.

Lenox Photo Supply Co. report a few copies of the Times Annuals still on hand.

Frank N. Blake, of North Adams, Mass., announces that he has ten (10) copies in paper covers still unsold.

W. D. Gatchell, agent, photographic materials, at 343 W. Jefferson St., Louisville, Ky., reports a small number of The American Annuals for 1893 still in stock.

R. M. Davis, 1728 Arapahoe St., Denver, Colo., has some copies of "The American Annual of Photography and Photographic Times Almanac for 1893" still on hand, all in paper covers.

C. R. Savage, of Salt Lake City, Utah, reports 20 copies of the '93 Annual yet on hand.

Vallentine & Dickerson, 637 Broad St., Newark, N. J., report that they have seven copies remaining of "The American Annual of Photography and Photographic Times Almanac for 1893."

The Geneva Optical Company, 67 Washington St., Chicago, writes that "a few copies still remain unsold on our shelves. * * * There is but one opinion expressed as to the book itself—'Unequalled and indispensible.'"

E. J. Horsman, 341 Broadway, reports eleven copies in paper covers.

Geo. J. Wolf & Co., 918 Arch St., Philadelphia, report some unsold copies in paper covers.

Butts & Adams.—"The modern and progressive" photographic stock house at 457 and 459 Washington Street, Buffalo, N. Y., report that they have a few of the '93 Annuals for sale, both in paper and cloth.

Messrs. E. M. Newcomb & Co., dealers in photographic apparatus and supplies, at 69 West 36th Street, New York City, write in regard to "The Annual" as follows:

"We have copies of '88, '90, '91, '92 and '93 Annuals, paper and cloth, and will sell them at the list price until exhausted. We have one copy of the Edition de Luxe, 1889, at $25.

"Picture-Making in the Studio," is the title of Scovill Series No. 42, a neat book of about 60 pages, by the eminent author, H. P. Robinson, nicely bound in cloth."—*Photographic Review.*

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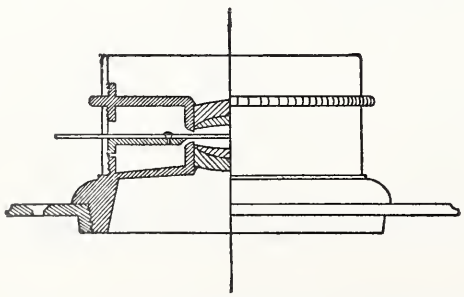
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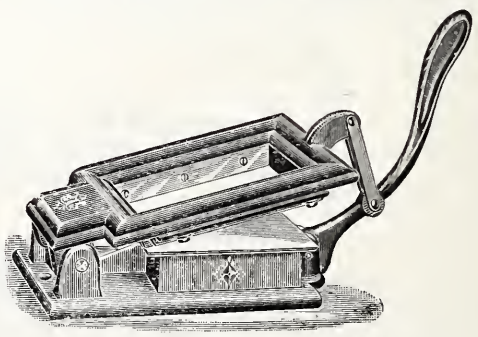
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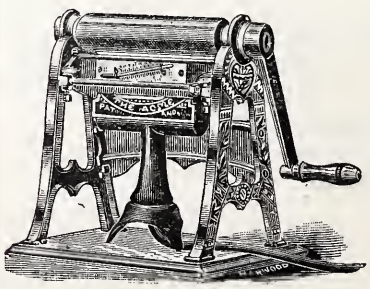
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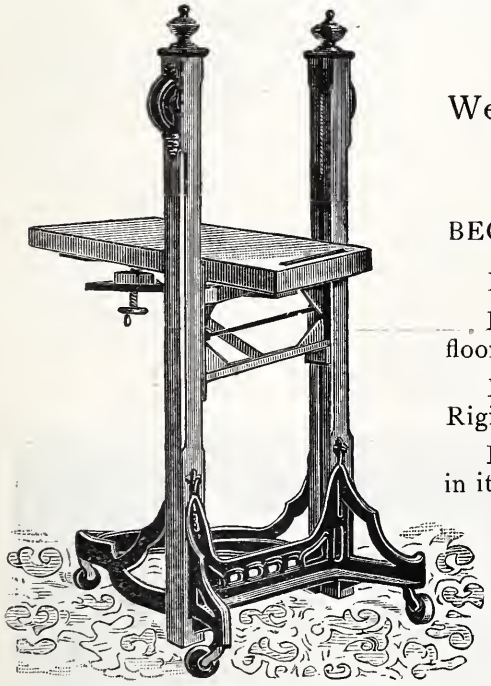
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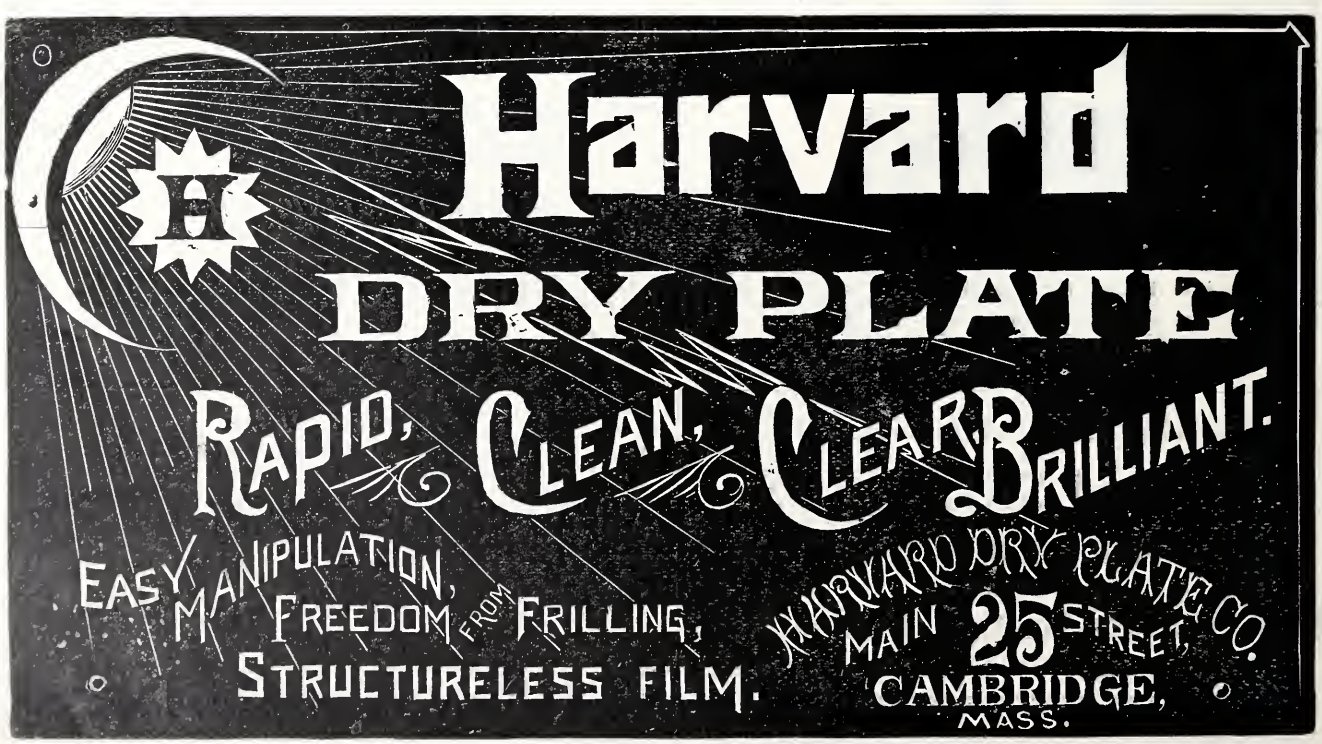
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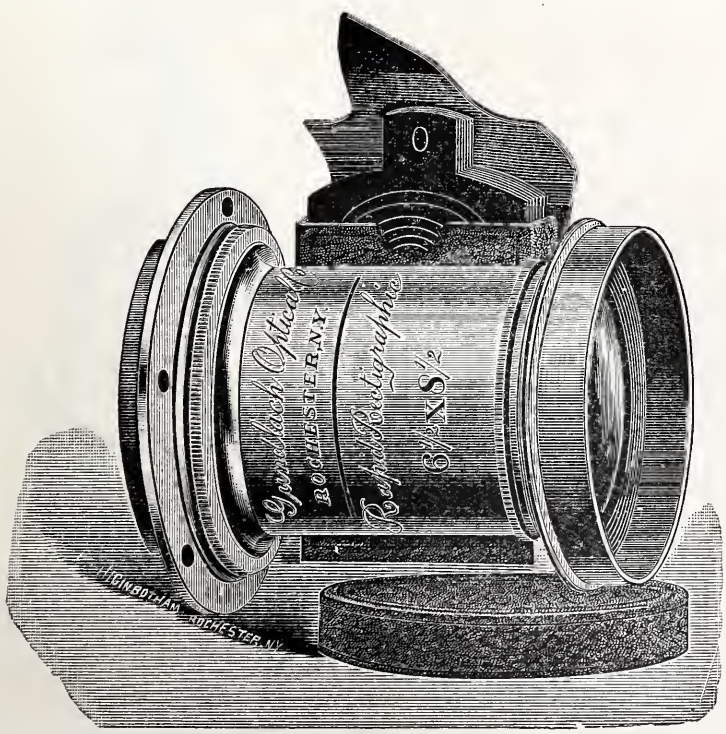
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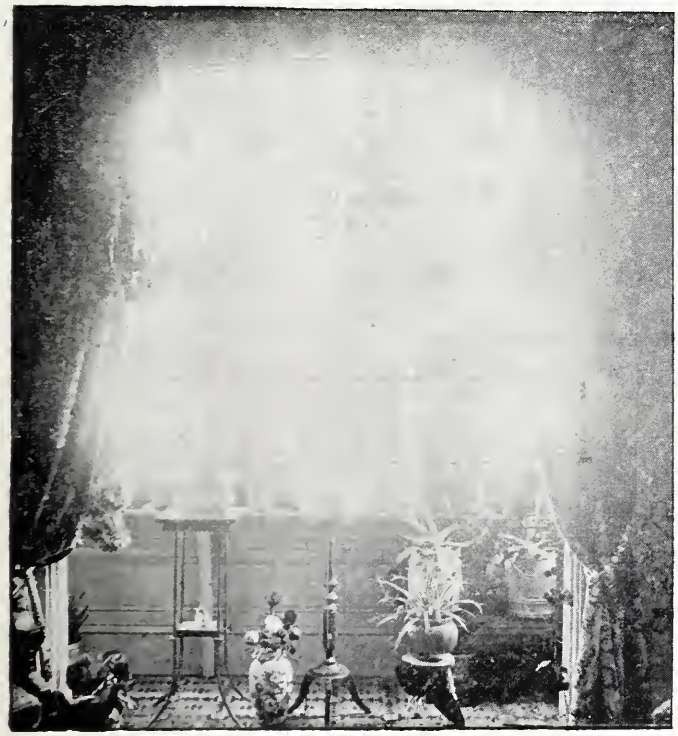
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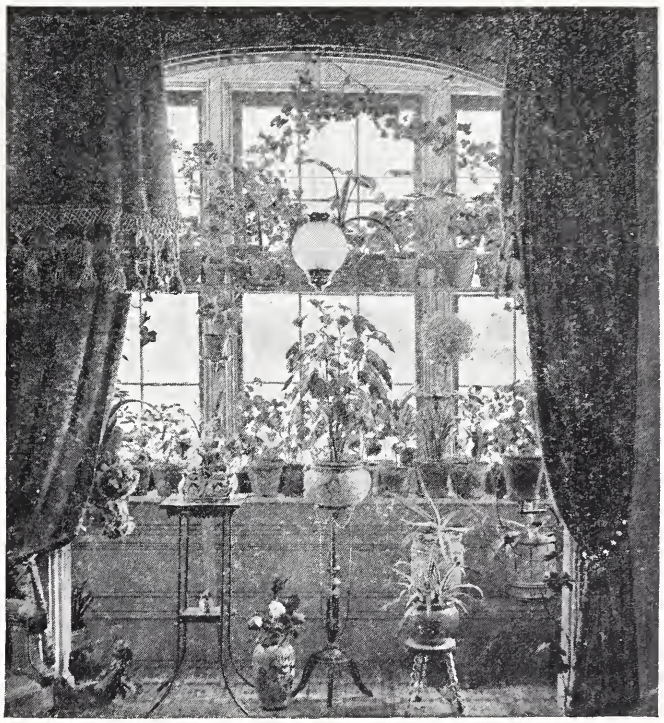
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PRESIDENT CLEVELAND.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. MARCH 24, 1893. NO. 601.

PRESIDENT CLEVELAND.

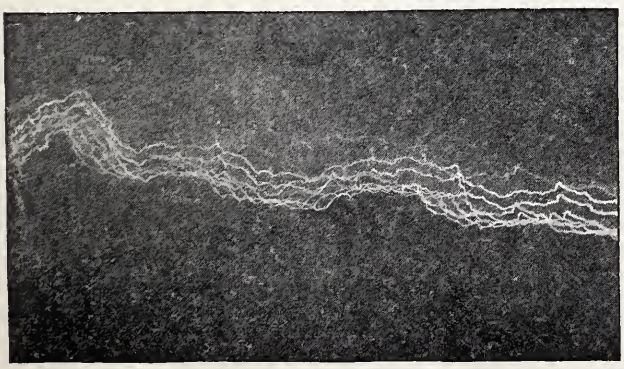
WE present our readers this week with an excellent portrait of President Cleveland, from the electrotype made by the Electro-Light Engraving Company, from a negative by the Messrs. Pach Brothers, of New York City.

So much has appeared in print concerning Grover Cleveland that scarcely an incident in his life is unfamiliar to even the casual reader of the daily newspaper. It is, therefore, entirely unnecessary for us to add any word to the mere announcement of the photographers' and plate-makers' names.

We may say, however, that the likeness is an excellent one, being one of the latest portraits which Mr. Cleveland has had made, and is in the usual excellent style of the Pach Brothers' studio.

STILL ANOTHER LIGHTNING PHOTOGRAPH.

WE present our readers this week with another lightning photograph. Our present specimen is the work of Mr. George F. Stone, of Olympia,



Washington, and is especially interesting from the fact that it was made with a hand camera from the rear platform of a railroad car running into Chicago from St. Paul. The exposure was made on the evening of August 8, 1892, during a violent thunder storm.

"I simply took off the cap," writes Mr. Stone, "and waited for the flash; I made two exposures, the other one not being successful. This one was especially noticeable because of the parallel currents of electricity. I should think from recollection that the flash was apparently 45 degrees in length."

PIN-HOLES AND OYSTER SHELLS.

THE most common and objectionable imperfections in negatives and diapositives taken by the wet collodion process are those numerous minute transparent spots called *pin-holes*, and the surface markings consisting of more or less irregular patches, or scums of reduced silver adhering on the surface of the film, known as *oyster shells* and *surface blotches*.

For this article, which we write by request of a photographer working in a photogravure establishment, we will explain the causes which originate them, and how they can be avoided.

Pin-holes.—As demonstrated by Persch, soon after the first publication of Archer's collodion process in 1852, silver iodide dissolves in silver baths forming iodo-nitrate of silver crystallizing in otohedrons. In certain circumstances these crystals deposit with adherence on the collodion photofilm, thus giving rise to the defect now in question by their interposition between the luminous image and the said film.

When the silver bath is saturated with silver iodo-nitrate, the crystallization of this salt on the collodion film is often the result of the evaporation of the liquid during the exposure time. In this case the silver solution in excess by becoming more concentrated partly dissolves the silver salt of the film, and thus produces a secondary imperfection.

The crystallization of the silver iodo-nitrate on

the photo. film also occurs during the immersion of the plate into the silver bath. It can be seen on the film when the plate is removed from the bath. The cause of this phenomenon is not well ascertained, for it does not take place with a new bath, although it may be saturated with the iodo-nitrate. It seems that a silver solution which has been in use for some time becomes sursaturated, that is, holds a greater amount of silver iodide than it can dissolve in the normal state, and thus produces the defect alluded to.

Lastly, pin-holes may arise from the turbidness of the silver baths, the particles of matter in suspension attaching themselves on the film. The remedy for this cause of imperfection is obvious.

Generally, except in the case of long exposures, pin-holes are effectively avoided by several times dipping in and out the sensitized plate, on its removal from the sensitizing bath, in another silver nitrate solution at 4 or 5 per cent. of water acidified as usual.

Another remedy, when the bath is new, is to add distilled water to it until it becomes milky, then, after filtration to evaporate the solution to its orginal volume, or to add silver nitrate to bring the bath to its proper strength. But the defect usually occurs when the bath has been in use for a certain period. In this case after adding distilled water, as said above and filtering the bath should be evaporated to dryness, then fused for a few minutes, when the silver nitrate in fusion is allowed to solidify and to cool before dissolving it in a quantity of distilled water sufficient to obtain the orriginal volume. Whenever a collodion silver bath is out of order it should be treated in this manner.

A silver bath contaminated with silver sulphate or lead nitrate produces pin-holes. In the latter case there is no remedy; in the former it suffices to precipitate the sulphate by a small quantity of carium nitrate dissolved in water. This remedy should be tried before doctoring new baths by other means.

Oyster shells are most generally troublesome in warm weather. They occur with both new and old silver baths, but more readily with the latter, which by time and use become in a state of easy reduction from the reaction on silver nitrate of alcohol, ether, and organic matters, specially from a peculiar compound of nitro-cellulose or nitro-glucose, which dissolves in the silver bath, as it appears from the presence, ascertained by J. Schnauss, of a strongly hygroscopic substance. "This substance, heated on platinum, threw off an empyreumatic vapor, showing by its smell nitrogenous contents and exploded on being lighted. Heated to the melting temperature, the substance evolved hyponitric acid." These baths are necessarily prone to produce oyster shells on the photo film when the solution comes into contact with particles of organic matter, possessing even a weak reducing property, which form nucleuses of reduction. Such particles are always found in the plate-holder, especially on the lower end, and mostly consist of silver nitrate partly reduced in presence of organic substances, the material of the holder, etc. When they come into contact with the wet film they ascend upon it by capillary attraction, and, serving as nucleuses, determinate even in the dark the reduction of the silver salt to metallic state, which form the stains or scums adhering to the film.

When oyster shells arise from this cause and are merely accidental, as a remedy, we advise the reader to slowly, *very slowly*, remove the plate from the silver bath, in order that the least possible excess of liquid remains on the film, to rest it in the holder on strips of blotting paper, and to back it with a damp sheet of the same. Washing the plate on its removal from the sensitizing bath in another new silver solution, as above explained, is also advisable.

Another cause of oyster shells is the scum of reduced silver floating on the surface of the bath, which is carried off on the film when the plate is removed from the bath. The remedy is obvious.

Long exposures favor the formation of oyster shells.

From whatever cause they arise—long exposures specially—oyster shells and pin-holes are avoided by several times flowing the plate, on its removal from the sensitizing bath, with the following solution, and then draining it well, very well, on blotting paper before placing in the holder on strips of pure bibulous paper:

Silver nitrate	20 parts
Gum arabic	35 parts
Sugar	10 parts
Glycerine, pure	180 parts
Water, distilled	480 parts
Acetic acid, No. 8, pure	4 to 5 parts
Alcohol, not methylated	4 to 6 parts

Thus prepared the film will keep moist for a long time before and after exposure.

To keep the film moist for a short time, during long exposures, the film may be washed with a more simple compound, thus:

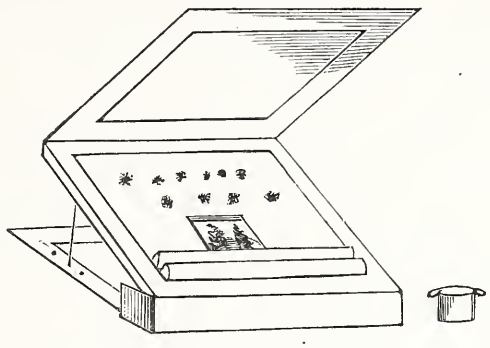
Silver nitrate	20 parts
Glycerine, pure	150 parts
Acetic acid, No. 8, pure	4 parts
Alcohol, not methylated	4 or 6 parts
Water, distilled	480 parts

COLORED LANTERN-SLIDES.

The beauty of a colored lantern-slide is of course in direct proportion to the care, precision, and taste shown in applying the color. I have felt so disturbed by the crude, raw and fantastic work which is exhibited upon screens, and am so confident that work of a superior quality could be produced by many, who are possessed of correct judgment and some natural facility in the use of a brush, that I beg to say a few words in relation to this interesting subject. The slide makers and lecturers are in need of good colorists, those too who can combine the knowledge of technique with the discernments requisite for producing truthful and artistic results. As also I have frequently received letters in reference to this subject I believe that some simple directions would be very generally useful and might lead some thoughtful person into the cultivation of this beautiful art which to-day is perhaps less occupied than any other field of employment.

At the outset have the transparency or slide which you propose to color of very good quality, as good in fact as it can be made, sharp, not too dense, and with perfectly clear high lights. In the second place procure the proper colors and insist, in getting them, to receive only such as are warranted and made for this purpose. The artist can employ water or oil colors but the former are more generally used in this country and perhaps can usually be more readily obtained. The article needed is the Tube Transparent Water Colors put up by G. Rowney & Co., of London, and which have printed on their label "For Glass Painting." This direction is very essential as other moist water colors prepared by this firm are not transparent and would be utterly worthless in work of this character. Almost any dealer in art material will order them and will also furnish a list of the colors needed. I have had my attention called to the unpleasant experience of some colorists in not receiving what they order, and meeting with a very objectionable inclination on the part of dealers to supply some substitute. In all such cases insist upon the genuine material, as the results the artist aims to secure cannot be reached without the very best colors and the most flawless slides.

The slide or transparency having passed inspection, and the proper colors having been obtained, flow the plate with any good negative or positive spirit varnish, and then prepare the colors. The colors should be pressed from the tube in small quantities upon a clear glass; the best way, perhaps, is to take out the ground glass from a retouching frame and substitute a clear plate glass, upon the upper part of which in one or two rows squeeze out a very small quantity of the colors to be used. In this way waste is avoided. Then place the slide to be colored, after having it varnished and well dried, on the plain glass, resting upon a strip of wood, in the same position as that assumed by a negative when it is retouched, as shown in figure



Procure good sable hair brushes provided with fine tapering points, and also one or two flat ones, about one-quarter of an inch broad. Let them be of the best quality. The colorist provides himself with a cup of clear water in which he moistens his brush, and then dipping it in the moist color, and avoiding filling his sable with too much pigment, begins the application of the tint. Begin with the sky in a landscape, as the effectiveness of a landscape picture depends greatly upon the perfection, softness, and graded color of the sky. The treatment of the sky can be varied according to the effects desired, and the artist may be led into the most successful imitations of nature. For ordinary broad daylight effects commence with blue at the top and wipe a line of color clear across the upper part of the slide and bring it down near the horizon, when a little yellow is brushed across the slide down to the land line. The mingling of the edges of these two colored zones must be nicely done, and for this purpose stipple the outline of the two sections with the second or third finger of the right hand. This blending along the line of contact can be very successfully accomplished after a little practice. Should the colors seem a little too dry for manipulation breathe on the slide a few times, and the operator will be surprised to see how attractively he will be able to stipple or blend the two colors together, and let him continue the breathing as often as necessary, as these colors, ground in honey and glycerine, soften naturally to this treatment. He can thus secure a clear and soft sky. For sunset effects use below the yellow a thin streak of red and stipple as before until it is pleasantly blended with the overlying yellow. If

in the application of these sky colors steeples, towers, mountain summits, houses or trees have been covered with color they can be readily cleared with a clean brush and a little water. After these cleared parts are dry, proceed to the body of the slide and color the foliage, ground, rocks and buildings, as near to nature as possible, avoiding too deep greens, as this color shows intensely through the lantern projection. For snow and ice scenes use a very slight tint of azure blue. There is in all cases no shading, simply smooth even washes of color, as the shading is already furnished by the photograph.

In regard to moonlight effects it must be strongly recommended to omit the painting in the slide of an artificial moon, or more properly clearing a spot for this unnecessary luminary. In selecting a slide for moonlight effects choose one with strong contrasts, deep shadows and bright high lights. Frequently a blue wash over the entire picture, carefully removed with a brush and water from the high lights, produces excellent results of this character, while a few red spots in windows or street lanterns will enforce the expression of a moonlight scene. Sometimes a sombre sky of a gray tint and properly stippled will produce the night effect quite perfectly. In coloring dresses, etc., brilliant colors are generally most effective and pleasing.

When the slide is finished it will be dry in a few minutes, then flow a spirit varnish over the surface, drain, and set aside to dry. Then put on a mat of fair thickness, cover and bind in the usual manner. This mode is the most simple, practical and effective. The second method, by the use of oil colors, requires much practice and experience and is much more tedious and slow, and may be treated in another article.

In conclusion, I may suggest to make the reflector in the retouching frame a sheet of white cardboard instead of the ordinary mirror. Sit near a window in painting, without sunlight, and in every way avoid dust. Too much care cannot be taken in this last regard, as the prettiest and most painstaking efforts may be ruined by the intrusion of grains of dirt, and floating hairs.

Let the novice practice first upon simple subjects and by modesty in coloring reach a high ideal. So much rubbishy painting is extant, harsh, wild and sensational coloring, that while the field is an open one to new aspirants, it is to be hoped that those who may be led to color lantern-slides from these remarks will try to restrain that childish appetite for lurid and glaring effects, and be guided by a chaste and educated taste.

The field of lantern-slide coloring is an excellent and tempting one. It can be made a profitable one. Of course there are difficulties to be overcome, but practice will gradually dissipate them, and when the art is acquired it will be found delightful in itself, and lucrative in its results.

Lucien C. Laudy.

ON THE APPLICATION OF PHOTOGRAPHY TO SEISMOLOGY AND VOLCANIC PHENOMENA.

There is scarcely a branch of art or science that does not at the present day call in the aid of photography, either directly or indirectly, and seismology is no exception. It may, therefore, not be out of place in the case of a journal particularly devoted to this subject to enumerate and briefly describe the various applications of photography that have actually been made, or that are suggested, in connection with earthquake and volcanic phenomena.

First, of course, we have the common application of photography to record the effects of earthquakes and of volcanic eruptions. The value of photographs of this kind cannot be over-estimated, but it will not be fully appreciated till considerable time has elapsed, and until future seismologists want to compare the effects of earthquakes and eruptions of their time with those of the present time. We can imagine of what value they will become if we think what we would give for an accurate set of photographs of the effects of any historical earthquake or eruption, say of the last century. Undoubtedly, a hundred or two of years hence, it will be of the greatest importance to geologists to be able to compare the condition, for example, of Bandai-san with its condition within a few days of the eruption, that blew its upper half into the air nearly five years ago. The more rapid changes in the interior of the craters of active volcanoes can also thus be noted with advantage. Even such secular movements as the gradual rising or depression of coasts may also, perhaps, be recorded more definitely than they have been heretofore.

There is one thing that should be emphasized here, and that is the importance of preserving systematically all photographs of the kind mentioned, printed by some permanent process. In cases where the photograph is of such general interest that the outside public may be looked upon for the purchase of anything over about 50 copies, the collotype process is at the time of writing to

be recommended, in other cases the platinotype, in spite of its present comparative expensiveness on account of the recent great rise in the price of platinum. Up to the present time, so far as the writer knows, such photographs as are of particular seismic interest are to be found scattered through various publications, but have not been systematically brought together in any single collection.

Professor John Milne has used photography in determining the curvature of the sides of volcanoes. That is to say, the inclination and curvature were measured from photographs at the time in existence. In using photographs for this purpose it is necessary to be sure that the swing-back of the camera was vertical at the time the photograph was taken, otherwise the measurements will not accord with the truth. Now, although photographers have been pretty well drilled into appreciating the necessity of having the swing-back of the camera vertical in the case of buildings, there are few that appreciate the necessity in cases where the subject contains no right lines, and the greater number of photographers "tip" the camera without bringing the swing-back to the vertical again, in photographing a high mountain. This is, indeed, one of the reasons for the commonly unsatisfactory rendering of mountains by photography. The effect of tipping back the camera, without readjusting the swing-back, is to give an effect in the photograph as if the mountain were leaning away from the camera to just the amount that the ground-glass leans back. In other words the slope of the mountain is reduced, and the mountain is dwarfed. There may also be slight errors due to refraction.

We next come to another set of uses of photography that need little more than enumeration. Thus the record of an earthquake by nearly every seismograph, is scratched on smoked glass, the smoke film being afterwards fixed with common photographic varnish. It goes without saying that photography is the best way of obtaining copies of such records. The blue process is most commonly used, although, in the case of the small diagrams given by bracket and duplex pendulum seismographs, more delicate processes have a decided advantage. Except for want of permanency, albumenized paper is to be preferred to anything else.

It scarcely needs to be stated that photography has been useful in producing illustrations of seismological insruments, also in a number of matters of detail such, for example, as the production of scales, with finer division than any that were readily procurable machine divided.

We now come to a consideration of more special adaptations of photography to seismology, and, to avoid the necessity for repeating his name every few lines, I state here that nearly all these adaptations are the work of Prof. John Milne, F.R.S., the writter sometimes giving assistance in some of the purely optical and photographic parts.

Some two years or so ago, an attempt was made to find whether any change in electrical potential between the earth and the atmosphere preceded, accompanied, or followed earthquakes. An instrument to keep a continuous potential record was devised on the following lines: One terminal of a mirror galvanometer was connected with a metal plate in a well of considerable depth, the assumption being that the potential of the well water would be the same as that of the earth at the same depth. The other terminal was carried to a metal plate at the ground level. A beam of light was thrown on the galvanometer mirror and, being reflected, was received on a photographic plate, narrow and long, kept moving slowly in the direction of its length by clock-work. A continually changing potential was shown, and there were several cases in which there were decided deflections at the times of earthquakes, but there was not sufficient consistency in these to make it evident that they were the result of anything but the mechanical effect of the shocks on the galvanometer. The subject is one that yet requires attention.

There has been much investigation of "earth tremors" and "earth tilting." We are accustomed to look on the "solid earth," apart from its planetary motions, as the very type of what is stable and steady, but it is now known that it is never at rest. It is always trembling, and there is reason to believe that its surface is often slowly tilting in one direction or in another. These motions are extremely small; to get indications of them, much less to measure them, is very difficult, and, up to the present, it has been impossible to separate them, one from the other, with certainty. Thus no tremor recorded has yet been made of which it can be said with *certainty*, whether it is recording true tremors or "tips." An ordinary pendulum will be affected by "tilts" but not by tremors, unless these happen to coincide with its period. The difficulty is to record in any way the extremely small motion of the bob of the pendulum. A partly successful attempt was made to solve the difficulty by photography. A silver bead was suspended by a silk fibre in a hollow stone column, which prevented atmospheric influence. A beam of light was thrown on the bead, and the image of the point of light, passing through a micro-objective, placed vertically below the bead, gave an image of the spot of light on a

plane at a considerable distance below it, along which a photographic plate could be made to travel by clock-work, the motion of the bead being, of course, greatly multiplied—being in fact multiplied in the ratio of the distance between the bead and optical centre of the lens* and the distance between the optical centre* of the lens and the plate receiving the image.

A word or two should be said on the optical principles here involved. If a silver bead were a perfect sphere, or indeed, if the surface were everywhere convex, the form only approximating to a sphere, the spot of light produced by the reflection of any source of light, say a lamp flame, could be made as small as might be desired, without being reduced in brightness. The further the source of light is moved away from such a bead, the smaller becomes the spot, but its brightness remains the same and is, indeed, at all distances, leaving air absorption out of the question, the same as the source of light itself, less a constant percentage of loss on accout of absorption of light at the reflecting surface. This arrangement is, in fact, the "artificial star" used by opticians in testing telescopic and other objectives, when it is not convenient or possible to focus on an actual star.

It was thought that, in the case of this instrument, as the spot of light could be made indefinitely small, at will, the image of the spot could be made as small as might be desired, however great the amplification. It was found, in practice, that this was not the case. If the amplification were great enough to be useful, the spot of light was too large to draw anything but a very wide line. The lens was a high class $\frac{1}{4}$ inch mico-objective, and the fault was probably not in it. It is likely that the bead was not really convex throughout, but that the surface consisted of minute facets, or more likely grooves. If a bead of mercury could by any means be used the results would probably be much better.

Excellent results have been got by the aid of photography by the tremor recorder described in a report on the Volcanic Phenomena of Japan. (British Association reports 1802.)

The only difficulty here is that it cannot be known for certain, whether these instruments are showing tremors or "tips." In this case the light passing through a narrow vertical slit, behind which there is placed a small lamp, passes farther through an objective, is received on the mirror, and is from it reflected on to a horizontal slit in the front of a box which contains a photographic plate moving virtically by clock-work. Of course any motion of the mirror of the instrument, whether produced by tremors or "tips" is amplified by the beam of light, whilst the horizontal slit cuts off all superfluous light, so that a spot only reaches the plate. Daily observations were taken on plates 12 inches long, $2\frac{1}{2}$ inches broad moved by clock-work, at such a rate that they took 24 hours to travel their whole length. With this slow travelling vibrations were not separately registered. The breadth of the line across the plate, indicated the amplitude of the vibration at any particular time and showed that there attained a maximum at intivals five to ten minutes. In working with these slow speeds it was found that the light of a small kerosene lamp was ample, if the plates were rapid, but it was considered advisable to get a record of the actual separate vibrations during "tremor storms." To do this the plate was caused to travel rapidly, at the rate of 12 inches in about 30 seconds. With this rapid travelling the light of a lamp was quite inadequate, and a magnesium light produced by the burning of magnesium ribbon was used. The annexed diagram illustrates the sort of records that were got on the slow travelling and on the quick travelling plates.

Of course the line of light that did the actual photographic work was an image of the slit, which slit was made very narrow. I was surprised, in connection with this, to find how little difference it made what kind of objective was used to cast the image. A high class portrait objective was suggested as on account of the perfect correction for both the spherical and chromatic aberration of the pencil's axial, or nearly so, I thought that the results would be much superior to those got with an inferior lens. To my surprise there was very little difference between the results got by the use of such a lens, and those got by the use of a single double-convex, or "crossed" lens, not even achromatized.

In 1887 MM. Fouqué and Michel Lévy described a set of experiments they had made to determine the rate of transmission of shock of an earthquake nature, produced by exploding dynamite, and in other ways, through different kinds of soil, using a photographic arrangement for recording the time and durations of vibrations. An incandescent electric lamp threw a beam of light at an angle through a lens and on to the face of mercury in a dish. The reflected beam of light was brought to focus on a revolving plate. If there were no motion of course the light simply drew a circle. If there were any vibration, the beam of light was set

* More strictly one of the "principal points" of the lens.

in motion, and the circumference line of the circle was widened, and became indistinct. Thus the beginning, duration, and ending of the motion were indicated.

So much for what has already been done. It may be worth the necessary space to say a word or two about applications of photography that are, as yet, only contemplated.

In the case of all seismographs at present in use the "steady point" is a comparatively heavy mass of metal. There are no objections to this in the case of slight earthquakes but, in the case of great ones, when we have tilting the mass is liable to over-swing the mark and to exaggerate the motion. There is also the objection that it is never known for certain whether "tips" or lateral motions are being registered. It is possible that this difficulty may be got over by the use of a very light "steady point," but in such a case the ordinary method of drawing the record by a point scratching through a smoked film on glass, will not be admissible, as the friction would be too great. It will be necessary, in this case, to resort to photography, which introduces no friction at all.

At places where no regular seisological observatories are situated it is often desirable to have a record of the time of occurrence of earthquake. The simplest way of doing this automatically is to have an arrangement whereby a clock is brought to a stop at the moment an earthquake begins. One objection to this arrangement is that thus stopping a clock makes it often difficient for observers to reset it at standard time. It has been suggested that a photograph of the face of a common watch might be taken at the instant an earthquake occurs. Were earthquakes so considerate as always to take place in the day time, there would be very little difficulty about the affair, but unfortunately they are not, and the difficulty is about a night illuminant, because, of course, the exposure must be very short to show the seconds hand of a watch fairly well and this necessitates a very bright artificial light. Some experiments made several years ago were very encouraging. Since then "magnesium cartridges" have been introduced, and there is no doubt that an arrangement could be devised whereby one of these could be ignited at the instant an earthquake occurred, and if the ignition took place fairly near the dial of a watch, a photograph showing hands could be made even with a lens of only moderate angular aperture. It is somewhat doubtful, however, whether such an instrument could be placed in the hands of one unskilled in the use of scientific instruments, and the object of watch photography is to get an appliance that may be placed in the hands of any one.

On the other hand, it has suggested itself to the writer that the difficulty might be got over by fixing a minute silver bead on the end of each of the three hands of the watch. On the principle described above, in connection with the pendulum tremor recorder, the spot of light reflected by such beads ought to impress themselves on a plate with a fairly short exposure, even if the light be nothing more powerful than an ordinary lamp. The arrangement whereby a camera, with shutter to be released by an earthquake, a watch, and a lamp might be enclosed in a box so as to effect the desired result would not be complicated.

There are various other investigations in connection with which photography may possibly be used. Thus, although the motion of an earth particle during an earthquake has been very fairly investigated, there are still wanting data as to the relative motion of two earth particles at some distance from each other. It is of great importance to know what such relative motions are as, according to whether the motions of the earth particles at some distance apart are nearly in the same phase at the same time, or are in entirely different phases, is the effect of an earthquake on a building due to the inertia of the mass alone, or is due to racking. The construction of buildings to best resist these two destructive influences would be entirely different.

It is possible that photography may be used in connection with such investigations, but it is more probable that entirely mechanical means will be employed.

If the very long water level (at least several miles) proposed some time ago by Professor Milne to discover whether there is any slow, tipping motion of the land in certain planes, be carried out it may be found convenient to register the height of the water at the two ends of the level photographically.

It would, however, be possible to go on indefinitely enumerating the purposes to which photography might be used in connection with seismology, but those given must suffice.

W. K. Burton.

ONE POINT OF SIMILARITY.

Photographer: Reading an account of a prize-fight this morning, it said that one of the combatants "touched up" the other.

Reporter: Yes, pugilism and photography are alike in some respects, you see.

ON THE COMPARATIVE ADVANTAGES OF THE WIDE-ANGLE AND TELE-PHOTOGRAPHIC LENSES.

(*Continued from page* 143 *and concluded.*)

Mathematical Perspective.

2. *Mathematical Perspective*—Objects become smaller and smaller in appearance, and nearer and nearer together, the farther away they are. Thus streets appear narrower and narrower, and the houses lower and lower, the more distant they are. Parallel lines of all kinds, such as railway stringers, bridge timbers, etc., converge more and more to a vanishing point (Le Conte). Our judgment in the matters of size of objects, and degree of convergence of parallel lines, enables us to judge distance with great accuracy and almost without limit. Again, the size of an unknown object is judged by its angular diameter multiplied by its estimated distance. The retinal image of a given object, or the image of that object on a photographic plate, may have the same area covered by a larger object at a greater distance, or a smaller object at a less distance. In vision the estimated size of the object which produces the image will depend upon the distance we imagine the object to be from us. Thus estimates of size and distance are very closely related to each other, and an error in one would involve an error in the other.

It is important to note in this connection that if we mistake the size of a known object, as, for example, a boy for a man, we shall to the same entent misjudge distance. It appears to me that this is the crux of the unsatisfactory images given by wide-angle lenses, or lenses of short focus when a near foreground is included. In viewing photographs taken by such lenses we never do, as a matter of fact, place our eye (or take our point of sight) at such a distance from the photograph that the angular dimensions of a foreground object and another object, distant, it may be, only a few yards further off, shall include the angles which mathematical perspective has rendered them in the photographic image.

Take the case of an ordinary interior. The figure of a boy in the foreground would be represented by a much larger image than that of a man at the further side of the room. To look at such a photograph from the ordinary distance of vision—say ten to twelve inches—it would convey the impression that this room must be immense as regards its length, that such proportions could possibly be brought about. Our knowledge of the comparative dimensions of the boy and the man is such as to make the treatment of the latter not only disproportionate, but ridiculous. The same argument applies to the unsatisfactory rendering of all architectural subjects in confined situation. Were it possible to remove the point of sight, or the camera, further away from the subject in the foreground, one would immediately bring about less disproportion between the sizes of objects in the foreground and more distant points of the subject. We value short-focus lenses on account of the adequate depth of definition through receding planes, but their perspective, when including near foreground, never *looks right!* The painter artist fulfils in his drawing what no lens yet constructed can do: he takes his point of sight at an imaginary distance, anywhere further back from where he is forced to stand (if he finds it necessary)—at a distance, in fact, that his knowledge teaches him will practically put all his facts in the picture more nearly in the same place, so that the picture, as a whole, will look right; as, for instance, the daisy that he is painting in the foreground may really include an angle as large as the lady's foot some distance away, but he does not draw it as it actually is in mathematical perspective dimensions, but in his mind he makes that daisy go away and keep its relative size as a daisy to a human foot. This, from a near point of sight, the camera cannot do. If one were enabled to get far enough away to make such a subject more nearly on one plane, and so look right, it would, as a rule, be so small in size as to be useless. The advantage of "long-focus" lenses, or the more extravagant form, the tele-photographic lens, may now come in where a sufficiently uninterrupted and satisfactory view of any subject can be obtained. Distant groups of cattle, villages, architectural structures, etc., can thus be well illustrated, for, although they are considerably distant, the size of the image is such that they do not become insignificant.

Example.—Take an interior 50 feet long, or a group 50 feet deep, say nearest figure 10 feet and furthest 50 feet, and take both figures as 6 feet in height. With a lens of 10-inch focus the dimensions of the near and distant figures are $6\frac{1}{2}$ and $1\frac{1}{4}$ inches, respectively, or a proportion of five to one. The same subject, with the lens removed 50 feet from the first figure (and, therefore, 90 feet from the furthest), would give the dimensions of the figures as $1\frac{1}{4}$ and $\frac{1}{2}$ inches respectively, or a proportion of only five to three. A longer-focus lens, viz.: 50 inches, at the greater distance would maintain these more reasonable proportions, and also give the same absolute size, viz.: $6\frac{1}{2}$ inches to the foreground figure, as in the first case, but a proportion-

ately larger image to the distant figure, viz.: 4 inches. Now, a tele-photographic lens, to give the equivalent of 50 inches, would only require an ordinary camera extension of from 12 to 15 inches.

Another interesting comparison between wide-angle and tele-photographic views arises from the fact that we almost invariably look at the former from a greater distance than that of the focus of the lens with which it was taken, and at the latter from a less distance than that of the corresponding focus of the lens. So that wide-angle views may be said to be seen through a magnifying glass, and tele-photographic views through a magnifying glass.

Outline Form and Solid Form.

The other aspects of mathematical perspective are those of *outline form* and *solid form*. As we have but little to do with the latter in photography, we had better dispeuse with this first. In sight we judge of it chiefly by binocular perspective, but we also judge of it by light and shade. Light and shade are admirably rendered by photography. Binocular perspective comes into play very much more for near objects than for distant ones, and hence the illusion of solidity produced by the painter is most perfect *at a distanee*, where binocular perspective is very small. In all photographic work one main feature has been its paltry and insignificant rendering of distance, but I think it will be agreed that tele-photography has overcome this drawback, and placed the illusion that is most easily carried out by the artist within the reach of the photographer.

For reasons already stated, *outline form* is most unsatisfactory in photography when near objects are depicted at the sides of a picture taken by wide-angle lenses. We have seen that the drawing given to such objects is in strict accordance with monocular perspective, and this can easily be proved. No doubt many will remember this illustration of Mr. Debenham's vase (*British Journal of Photography*, October 30, 1891). Looked at in the ordinary way, it appears to be entirely out of drawing, although, viewed under the necessary fixed conditions described, the vase can be made to assume its proper shape. The unsatisfactoriness of such outline form in photography is so palpable as to make some subjects impossible in pictorial work. Take an ordinary interior with, say, an old couple one side of the room and a young couple at the further side. The necessary distortion brought about by a wide-angle lens could pay but a poor compliment to the features of those it depicted.

Focal Perspective.

3. *Focal Perspective.*—Monocular focal perspective again will have but a very small bearing on the subject. We are aware that, if one eye be concentrated on some particular near object, that object is distinct, but all other objects nearer or further away become dim. This is perceptible within much narrower limits than that of binocular vision, and can only in a minor degree contribute to the question of the insistence of better definition for some part of the picture as compared to the remainder.

The fact that the exercise of focal parspective is comparatively imperceptible has an interesting bearing on photographs, in that it accounts for the more perfect illusion of depth and solidity effected when they are looked at with only one eye, as the perspective comes out a great deal more distinctly; and here we note the great contrast that there is in viewing natural scenes with one or both eyes. With one eye the reverse takes place to viewing the photograph, and we require both to fully appreciate distance and solidity.

In concluding, gentlemen, I fear I must admit that I have hardly adhered to the title of my paper, and also I am afraid I have had but little to say that is new, but I hope the subjects touched upon and the suggestions I have ventured to make may not be without interest to you, and may encourage photographers to include among their other studies that of "vision," for I am sure they will find it not only a most interesting one, but also one that I may say is absolutely essential to the production of the best work.

T. R. Dallmeyer.

PHOTOGRAPHY IN ITS RELATION TO THE ART OF PRINTING.

(*Continued from page* 145 *and concluded.*)

Collodion for wet-plate photography, which I understand still maintains its stand for copying, was, as most of you are doubtless aware, introduced by Archer in 1850.

It is desirable, in order to procure the best results, that the subject be drawn larger than is actually required, and bolder in proportion.

I have also the pleasure to submit a specimen of another system, interesting on account of its producing somewhat similar results without the aid of photography. Here is a copper plate from which a "transfer" has been taken and transferred to zinc direct. The zinc plate is ready for etching in a similar way to the method just described. I also can show the finished block and impression from it. I have mentioned the production of lace for lithographic printing, but lace may also be illustrated by the aid of zinc blocks such as I have described. In the case of white lace the piece to be photographed is

fastened to black material which does not "give off" any light; consequently the result is a beautiful reproduction with sufficient detail to show the pattern. Black lace is made to adhere to ground-glass and photographed against the light, that is, the ground-glass is suspended in the line of light between, say, the window and the camera, the lace towards the lens.

So much for line drawings, but by far the more artistic blocks are designed by the term "half-tone blocks." These are specially suitable for portraits, landscapes, and architecture. The processes by which they are produced may be very simple when you know them, but they are not publicly known, and I am sorry I cannot do more than show you a specimen, the start and the finish, as I may call them.

Engraving Processes.

I read, however, that some modifications of the methods patented by Mr. Fox Talbot in 1852 and 1858 are understood to be in use. He called his protoglyphic engraving. Talbot got the image with bichromatized gelatine. The necessary recticular grain was given to the plate in two ways. By one of these he covered it after development with a fine deposit of resin. It is then ready for the etching solution. By the other method he took fine muslin or netting, and applied it by mechanical pressure to the plate, which covered it with fine cross lines. Goupil, of Paris, has a process which is believed to be worked upon the plan of forming a gelatine image, and then electrotyping it; but, as I have said already, the patentees of the various processes do not allow information to leak out if they can help it, and most producers have chemical secrets known only to themselves, though general principles may apply to all the methods.

Most of you are familiar with the lettering, as it is called, on the covers of bound books. The designs for these are usually cut in brass, from drawings on paper; but, since the application of photography, zinc blocks are now being made which bid fair to supersede the older and more expensive brass blocks. The metal for these is rendered extra hard to resist the heat necessary in the process of gold blocking.

All process blocks can be duplicated to any extent by electrotyping or stereotyping at a low cost, so that one may readily perceive the advantage to be derived by advertisers wishing the same illustration to appear simultaneously in, say, fifty periodicals or newspapers. The cost of fifty original blocks would, of course, be practically prohibitive.

Zincography.

The public, then, reap a benefit by the production of the kind of blocks that I have attempted to describe, because attractive books, newspapers, and periodicals are produced at a figure which would be well-nigh impossible if the old system of wood engraving were resorted to. Zincography, in its development, has naturally told unfavorably upon many wood engravers; but these, again, in many instances, have linked this department with their original profession, and really, for first-class work, steel engravings and wood blocks of high quality hold their own, though for commercial purposes people will not pay the high prices demanded for them. But then, again, it is quite impossible to employ photography on some subjects, and a choice has to be made of some other method of illustration.

One reason of the popularity of "zincos" is that they can be worked with the type, insuring, of course, a saving in the printing, the whole being done in one operation, instead of two or more, provided, of course, the type and block are to be printed in the same color.

In the illustration of books and newspapers it is, of course, most desirable that the reproduction of the photographs should be made as perfect as possible, and in this connection, before concluding, I must acknowledge my obligation to Messrs. Swain & Son, of Farringdon Street not only for valuable aid in the technical parts of my paper, but for the skill and care exercised in producing, at my request, the excellent specimens I have been privileged to submit.

I cannot pretend to have exhausted the subject before us, but I trust I have said enough to show you the utility, if I may be allowed the term, of the photographic art to commercial purposes. The application of the art in the way I have attempted to demonstrate has done very much to raise the tone of publications generally, and to educate the taste of the people who read them. It has also contributed largely to replace the crude and occasionally vulgar illustrations of by-gone days, and it enables authors and publishers to put into the hands of readers of even the cheapest literature artistic and truthful representations of persons, current events, and matters of interest generally.

J. H. Alabaster.

A KODAK CRYSTAL PALACE.

A rather lengthly article with the above title, appeared in the February 13th issue of the Rochester *Port-Express*, descriptive of the new building erected by the Eastman Kodak Company. We extract the following from this article:

The building has a frontage of 60 feet on State Street and a depth of 128 feet on Vought Street. It is six stories high exclusive of the basement, and there is an addition on Vought Street, two stories high 42 x 60 feet in area. The total area of the flooring is 55,000 feet—about an acre and a quarter; the floor area of the building which the company occupies at present on Vought Street is three-quarters of an acre, while the floor area of the buildings owned by the company at Kodak Park is over two acres, making a total of four acres on which the company will grow kodaks when it gets into the new State Street building.

The walls are three feet wide at the base and sixteen inches at the top. They are of hard pressed brick. The amount of daylight that will enter the building is one of the remarkable features of the structure. There are nine windows on each floor at the Vought Street side and four windows to each floor facing State Street and as many more facing west. Each window is in the neighborhood of ten feet square, so that the appearance of the building appeaches near that of a crystal palace in which the proportion between glass and other material is as ten to one in favor of the transparent article. The interior is not less peculiar than the outer walls. The system on which it is built is the "mill-construction" or "slow- burning" principle. In each floor there are twenty-four pillars of solid timber a foot square each. The floors are all of hard wood and lie on rafters which are suspended by iron stirrups from beams that rest on brackets on top of the

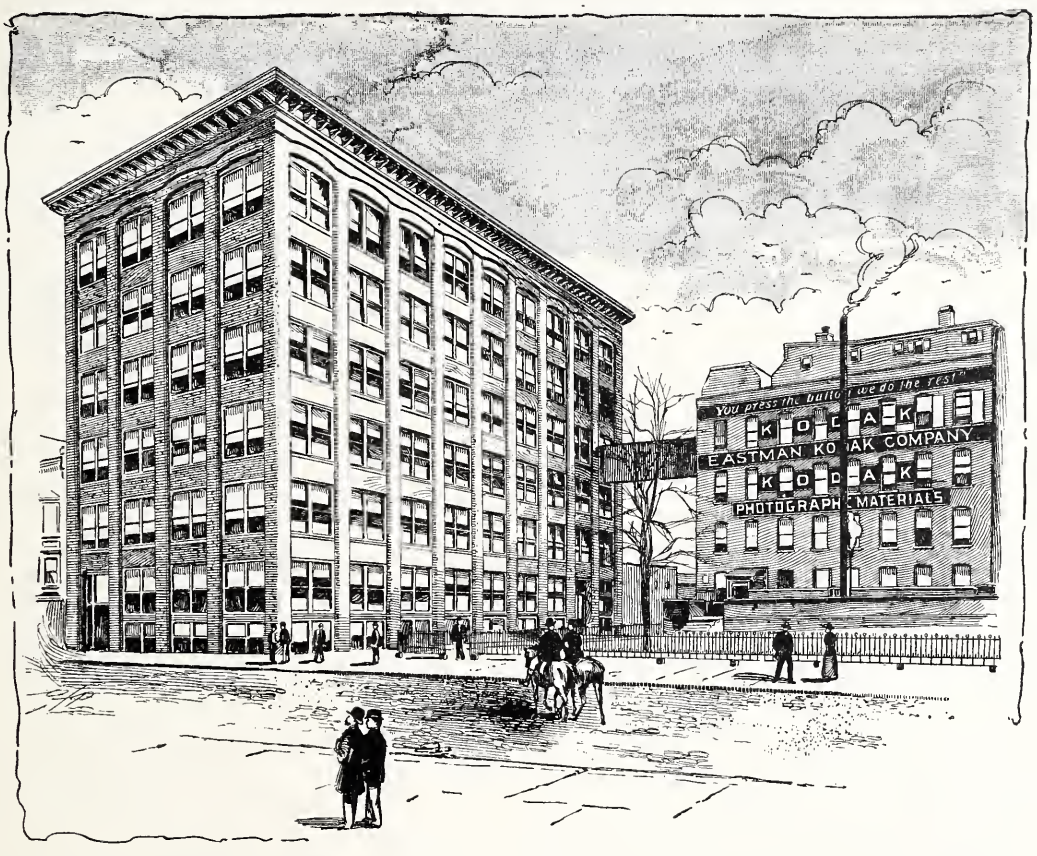
wooden pillars. The power will be supplied by a Corliss engine of 126 horse power, and the heating will be done by the Sturtevant system which is now in operation. The light in the basement is nearly as good as that in the floors above, and the floor is asphalt. The elevator runs in a brick well situated at the south wall.

PRESERVING THEM.

"What memorandum is that you are making?"

"Just making a note of the fact that I've been refused for the seventh time."

"You're like a photographer; you preserve your negatives!"



Notes and News.

"I think it is about right," writes Mr. F. A. Lewis, dealer in photographic supplies at La Fayette, Ind., in regard to THE PHOTOGRAPHIC TIMES.

"Mr. Robinson's writings upon Art in Photography have made him widely and favorably known to the publisher," writes the editor of *Anthony's Photographic Bulletin* in regard to "Picture-Making in the Studio by Photography."

Photography in the White House.—It may not be generally known that Mrs. Cleveland is an enthusiastic amateur photographer, and has a remarkably fine collection of photographs. She embraced photography during her early days at the White House, and many of her most interesting views were taken in the Executive Mansion.

The Eastman Kodak Co. sends to The Scovill & Adams Co. a framed picture of "The Kodak Girl" as she will appear when ready to go the World's Fair.

"She has made up her mind," writes the Eastman Kodak Co., "that if $2 a day must be paid for the privilege of taking pictures on the Grounds, she must make the most of her time, and has accordingly armed herself with a "Kodak" loaded with one hundred (100) pictures. She is sensible as well as good looking."

The Boston Mat.—"Your mat is the greatest labor-saving invention of the age," writes Mr. E. Burton Holmes, of Chicago, to Mr. W. Garrison Reed, of Boston, in regard to the Improved Boston Lantern-Slide Mat.

At the Photographer's.—"One more question, sir, before you begin."

"Well madam?"

"Is it possible to distinguish real stones from false ones on the photo?"—*Wilson's Photographic Magazine.*

The New York Camera Club exhibited the pictures submitted to the *Forest and Stream* in their recent amateur photography competition at their club rooms, 314 Fifth Avenue, Saturday evening, March 18.

On Monday evening an exhibition of Lantern Slides, consisting of the work of Miss Emily V. Clarkson, was given.

Cause for Regret.—Lady: I don't like this picture so well as I did the last one you took of me.

Photographer: Ah, madam, I have not the artistic taste that I had when I was young, and besides my camera is getting old.—*New York Weekly.*

"**It is one of the handsomest books** devoted to the record of photographic progress we have yet seen, and to attempt to give but a brief epitome of its contents requires unfortunately, more space than we are able to afford," writes *The Optician*, in regard to The American Annual of Photography.

Picnic Scene.—Laura (to her cousin, who had just kissed her): "Oh, Rudolph, we are lost! There is Mr. Miller!"

Rudolf: "Never mind him; he is a harmless fellow."

Laura: "He was; but now he is an amateur photographer."—*Wilson's Photographic Magazine.*

Photographic Societies.

CAMERA CLUB OF THE UNIVERSITY OF PENNSYLVANIA.

FRIDAY evening, March 10th, we gave our third annual exhibition in the auditorium of the Drexel Institute, which was well filled with an audience numbering nearly 1300.

About 200 slides were exhibited, many of them being excellent pieces of work. The endeavor was to make the exhibition as representative as possible, and to this end some slides were accepted from nearly every member of the club. It is only fair to say that many of the slides were first attempts at that branch of the art, and some few of them were first attempts at photography itself.

The membership of a college society changes so, as the classes come and go, that the only way to discover what it is really accomplishing is to note the work from year to year of each individual member.

A brief mention of some of the slides may prove interesting to your readers.

Mr. Frank Schermerhorn exhibited several long distance views taken in Western Massachusetts. They were all clearly cut and had excellent detail, rather above the average, I think, for such subjects. Equally good, however, were a number of similar views by Dr. J. T. Rothrock, in the Valley of the Gaspereau River, N. S. Mr. George W. Norris, who is well known for his pictures of lightning, exhibited one of these, together with some very fine animal studies.

Some picturesque bits along the Wissahickon Creek were exhibited by Samuel W. Grubb and C. W. Edmunds, which gave evidence of some thought in the composition of the picture, a point which is too often lost sight of among the younger amateurs of the present day. Another view of much merit was that of an old mill on the Rancocas Creek, the work of J. C. Salter.

The exhibition was a most gratifying success in every way, and served to make the influence of the club felt more widely than ever before, for the audience was the largest ever attracted by a similar entertainment in this city.

Henry Paul Busch.

EXPLAINED.

"A photographer ought to have little difficulty making a likeness of a good billiard-player."

"Why?"

"You know a photograph depends so much upon the sitting, and the good billiard-player knows so much about 'position,' see?"

Queries and Answers.

47 G. H., Minnesota.—In the issue of THE PHOTOGRAPHIC TIMES for November 18, 1892, you give an ingenious process for combining negatives, including the use of a solution of iodine in cyanide of potassium, etc. Will you do a favor to a fellow photographer by giving me your formula for that solution.

47 *Answer.*—A. Dissolve ¼ ounce of cyanide of potassium in 1 ounce of water. B. Dissolve 10 grains of resublimed iodine and 30 grains of iodide of potassium in 1 drachm of water. Pour A and B together and dilute to suit.

48 BALTIMORE.—Will you please give me the address of some firm that enamels photos. I have looked in all the journals for an address, but can find none.

48 *Answer.*—We do not know of anybody making it his business to enamel photographs for other parties. Every practitioner does that work in his own laboratory. You will find a good formula on page 95, "The Photographic Instructor," third edition, Scovill & Adams Co. publishers, if it is the object to enamel albumen prints. To aristos the high gloss is given by squeegeeing the print upon a tin-type plate.

49 G. OF S H. OF C.—I would like to know if photographing under electric light can be done successfully, and how should the lights be arranged? Should the light fall directly on the subject or from reflected screens? Any information on this subject would be thankfully received.

49 *Answer.*—Photographing by electric arc-light can be done, and is done successfully in many establishments, mainly so in reproduction ateliers. Col. O. Volkmar describes several systems of lighting in THE PHOTOGRAPHIC TIMES, Vol. XIX., pages 517, 553, 589, 651. For portraits or similar subjects we will describe another method, more easy to be arranged than any of the others, and equally effective. Suspend on a movable crane attached to the ceiling of your room, 5 arc lamps, each of about 1000 candle power, attach behind each arc a concave mirror, enclosed in glass lanterns covered with white tissue paper, arranged in this order:

. . .
. . .

the lowest lamps about 3½ feet from the ground, the highest about 6 feet. By moving the crane illumination may be well regulated, and light be reflected upon the darker portions of the subject by suitable reflectors. Exposure by such light in proportion to that of daylight in a glass house will possibly be like 7:1. For plane subjects, prints, engravings, etc., use one lamp, uncovered, and a metallic parabolic reflector. For printing use the same light, and place the printing frame about 40 inches from it. On account of its great richness in yellow rays the incandescent light is not suitable.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
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Commercial Intelligence.

SOLD OUT! SOLD OUT!

THE publishers of "The American Annual of Photography and Photographic Times Almanac" for 1893, beg to announce that the entire edition consisting of over 18,000 copies has been exhausted, and that they are unable to fill further trade orders.

They offer to announce in these columns without charge, the name and address of any dealer who may still have a few copies for sale. They request that such dealers will kindly notify them at once, as they are constantly receiving requests for the "Annuals" which they cannot fill and they wish so far as possible to facilitate the means by which every one who desires a copy of the book may obtain it.

WHERE YOU CAN OBTAIN THE AMERICAN ANNUAL FOR 1893.

T. R Crump, of Louisville, Ky., reports ten copies unsold.

Griffen & Bolwell, of Scranton, Pa., have a few copies yet unsold.

A. M. Knowlson, Troy, N. Y., reports a number of copies of "The American Annual" for 1893 still on hand.

Lenox Photo Supply Co. report a few copies of the Times Annuals still on hand.

C. R. Savage, of Salt Lake City, Utah, reports 20 copies of the '93 Annual yet on hand.

Frank N. Blake, of North Adams, Mass., announces that he has ten (10) copies in paper covers still unsold.

W. D. Gatchell, agent, photographic materials, at 343 W. Jefferson St., Louisville, Ky., reports a small number of The American Annuals for 1893 still in stock.

R. M. Davis, 1728 Arapahoe St., Denver, Colo., has some copies of "The American Annual of Photography and Photographic Times Almanac for 1893" still on hand, all in paper covers.

Vallentine & Dickerson, 637 Broad St., Newark, N. J., report that they have seven copies remaining of "The American Annual of Photography and Photographic Times Almanac for 1893."

The Geneva Optical Company, 67 Washington St., Chicago, writes that "a few copies still remain unsold on our shelves. * * * There is but one opinion expressed as to the book itself—'Unequalled and indispensible.'"

E. J. Horsman, 341 Broadway, reports eleven copies in paper covers.

Geo. J. Wolf & Co., 918 Arch St., Philadelphia, report some unsold copies in paper covers.

Butts & Adams.—"The modern and progressive" photographic stock house at 457 and 459 Washington Street, Buffalo, N. Y., report that they have a few of the '93 Annuals for sale, both in paper and cloth.

Messrs. E. M. Newcomb & Co., dealers in photographic apparatus and supplies, at 69 West 36th Street, New York City, write in regard to "The Annual" as follows:

"We have copies of '88, '90, '91, '92 and '93 Annuals, paper and cloth, and will sell them at the list price until exhausted. We have one copy of the Edition de Luxe, 1889, at $25.

A FEW MORE REVIEWS.

The American Annual.—"The American Annual of Photography and Photographic Times Almanac" for the year 1893 has been received from the publishers and forms an attractive and interesting volume. It contains over thirty full-plate illustrations, mostly by half-tone processes. There are two photogravures, the one by G. W. Webster entitled "Good Morning," being in our opinion the best and most appropriate. There are 123 contributions by as many writers which occupy 224 pages, and then there are 25 pages given to formulas of more or less interest.—*The Pacific Coast Photographer.*

"The American Annual of Photography and Photographic Times Almanac for 1893." Illustrated New York: The Scovill & Adams Co., price is, paper, 50 cents; cloth, $1.00; postage 15 cents.

Probably more of our readers will admire this volume as a work of art than for its technology. The handsome pictures are alone well worth the price.

Any one having a camera cannot well afford to do without the useful information it contains.—MEYER BROS.

The Scovill & Adams Co. have published a new work by Mr. H. P. Robinson, which should prove useful to many of our readers. It is entitled "Picture-Making in the Studio by Photography," and treats chiefly of figure studies and genre pictures made under the skylight. A useful chapter treats of combination printing, and a supplementary chapter gives the paper upon "Individuality in Photography," contributed by Mr. Robinson to the last British convention."—*Wilson's Photographic Magazine.*

TRY DR. ANDRESEN'S AMIDO DEVELOPER.

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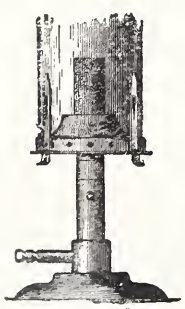
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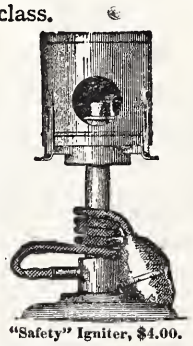
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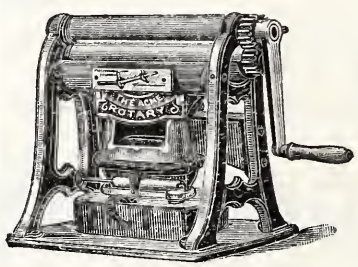


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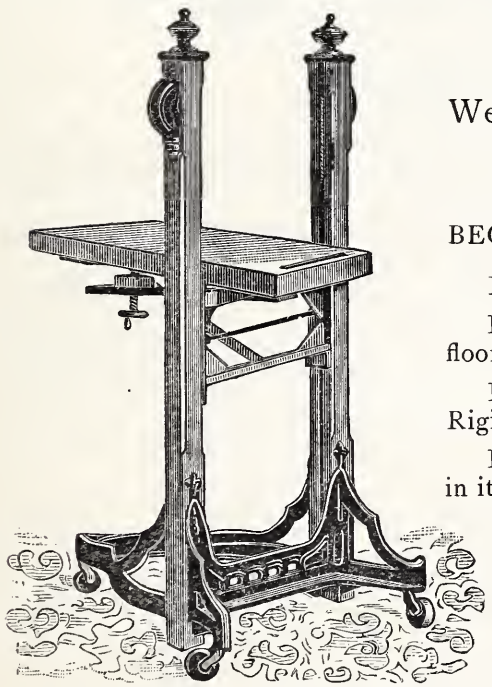
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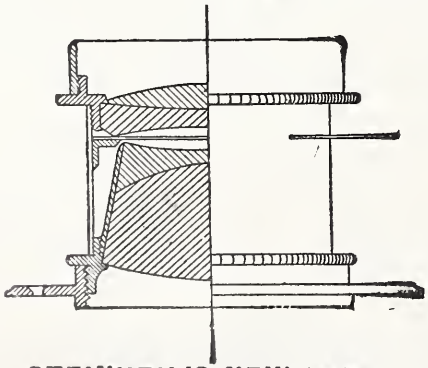
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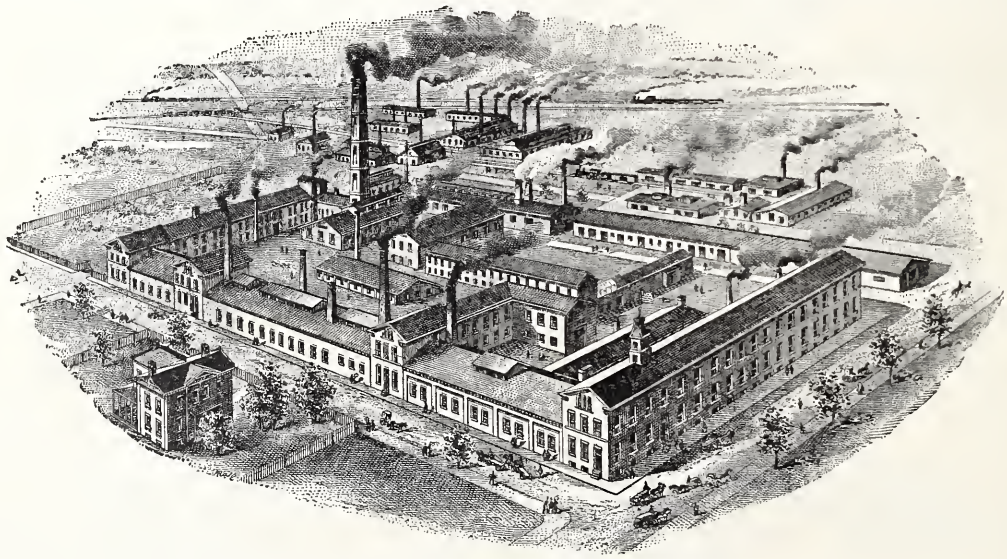
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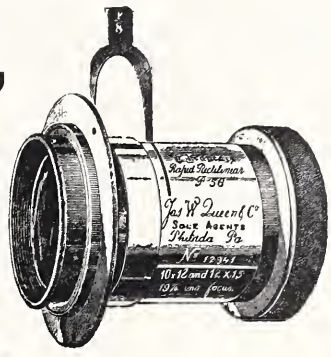
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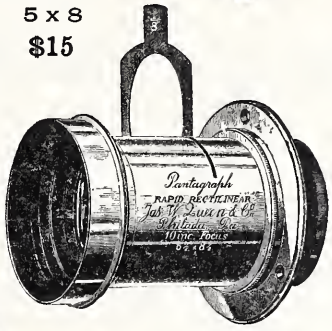
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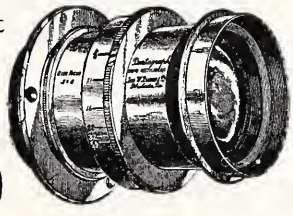
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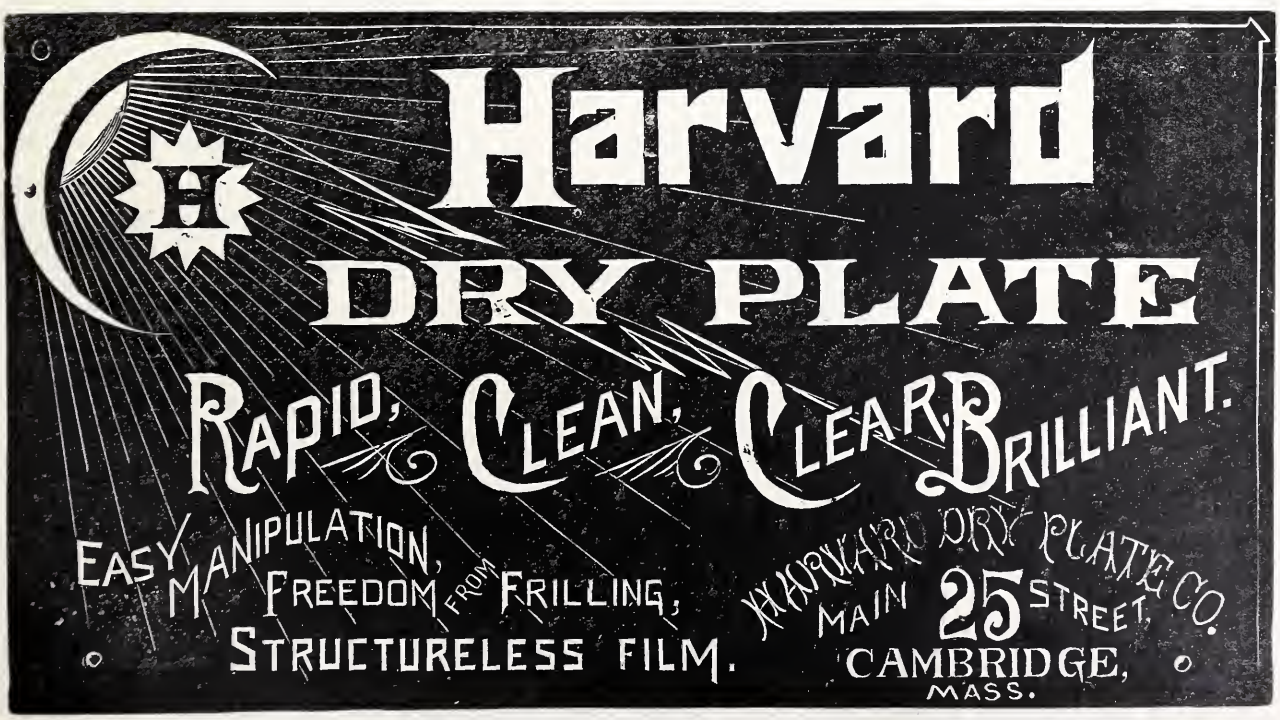
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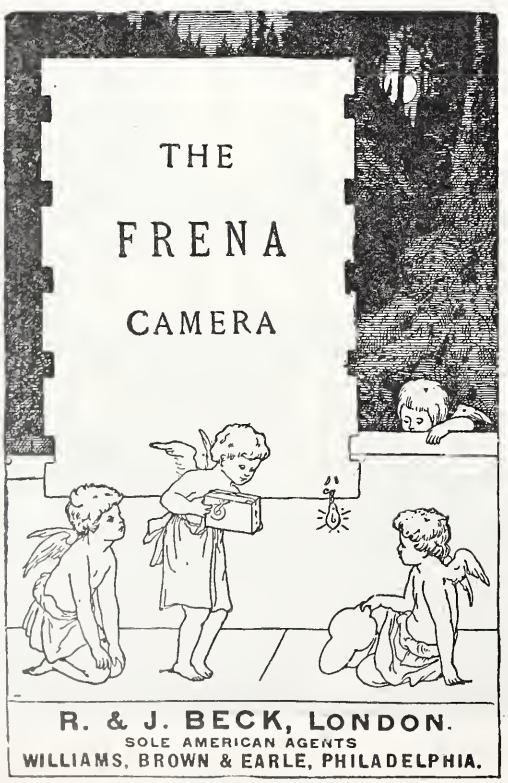
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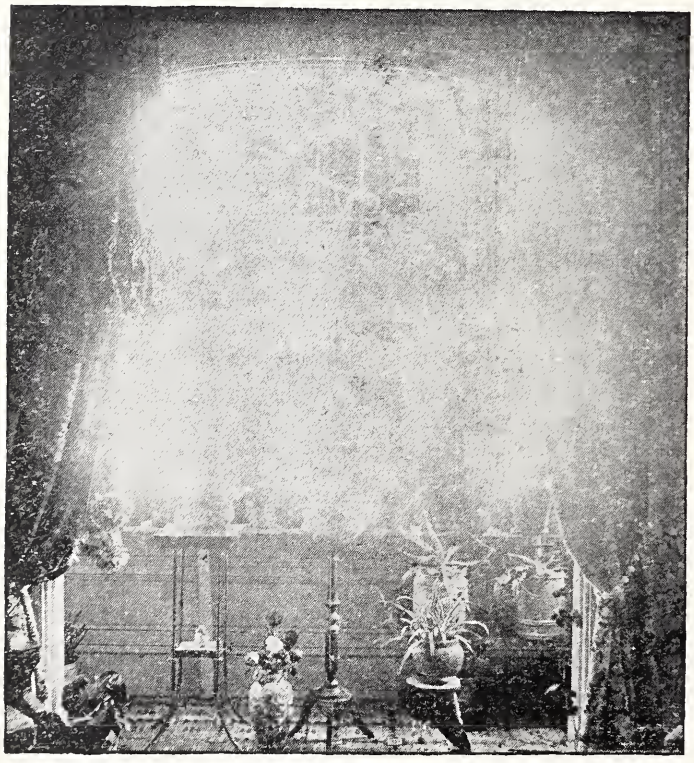
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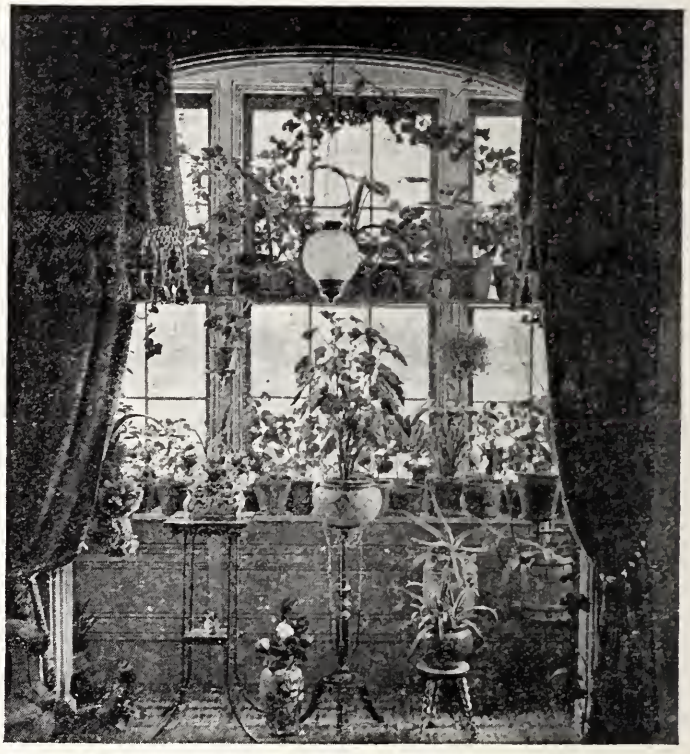
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LOOK ON

THIS PICTURE and ON THIS!



Reproduced from Negative on ordinary Plate.



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Both Negatives Exposed on the same Subject, one immediately after the other.

Note the Contrast!!!

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A COLLODIO-CHLORIDE PAPER.

THE CLIMAX IN THE PHOTOGRAPHIC PAPER PROBLEM.

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"Snow white lilies
here I bring,
For an
Easter offering;"
Thus our little maid did say,
Herself a Lily, fair as they.

Copyright, 1893, by Mrs N Gray Bartlett.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. MARCH 31, 1893. NO. 602.

AN EASTER MAID.

WE take pleasure in presenting our readers with the charming Child picture by Mrs. N. Gray Bartlett which embellishes this Easter number of our magazine.

Mrs. Bartlett is especially happy in her child pictures. She shows rare judgment in selecting her models, and then employs the experience of a trained artist in depicting them with her camera.

The present picture is in Mrs. Bartlett's happiest vein, and is an especially appropriate frontispiece for this issue of the magazine.

ACME PAPER.

THE Acme Emulsion Paper is not, properly speaking, an emulsion paper, but is probably so called because the results obtained with it resemble so closely those obtained on gelatine aristo prints. The supporting material is not photographic paper of any known brand, such as Rives, Saxe, etc., but an ordinary paper without distinctive mark. It is coated with a substratum and upon it is spread gelatine salted with chloride of ammonium.

The manufacturers give the following formulas for working this paper.

The sensitizing bath is as follows:

Silver nitrate	1 ounce
Water	10 ounces

Float two minutes and fume for twenty minutes in the vapors of ammonia.

TONING BATH.

For Purple Tones.

Borax	6 drachms
Water	2 pints
Gold	6 grains

For Black Tones.

Sulpho-cyanide ammonia	6 drachms
Water	2 pints
Gold	6 grains

We have found better results to follow, however, by employing the following method:

Sensitize upon a neutral silver solution 1:9 and allow the paper to rest upon it until all tendency of the edges to curl up has ceased. Then dry and fume for thirty minutes in the vapors of ammonia. Print as with ordinary aristo paper and fix and tone either in the combined bath described on page 40 of THE PHOTOGRAPHIC TIMES, volume xxiii, or tone and fix after previous washing the same as with an albumen print. The ordinary borax bath has given good results.

The advantages with this paper are many. The tone does not "go back" in the hypo bath when toning and fixing separately. *There is absolutely no possibility of a blister occurring.* High temperature may possibly soften the film a little, but this can be easily met by using alum or Helmold's hardening mixture.

There are some precautions to be observed. Never roll the paper film side in, and when drying the sensitized sheet, pin the corners against the wall or hang up two sheets back to back, the corners being held by clips. When the sheet hangs free it is very likely to curl up and crack the film. Do not use an acid silver bath with this paper.

The washed prints may be hardened by means of Helmold's mixture (1 in 25), and should they be washed again, they may then be filed up while still wet and treated like ordinary albumen prints. Or, they may be squeegeed upon matt or glossy surface like aristo prints.

The paper is a little more expensive than ordinary albumen paper or aristotype prints, but the sheets are very large, full 19 x 25 inches, and the results justify the additional cost. It is a paper which we think is bound to be very popular both with professionals and amateurs. Those who have tried it are loud in its praises. It is an imported paper, but can be obtained at any of the dealers in photographic materials.

LINEAR AND AERIAL PERSPECTIVES IN PHOTOGRAPHY.

THE linear and aerial perspectives are quite distinct one from the other. The former consists in representing upon a flat surface the various planes at which objects are placed and, therefore, their apparent contours; it can be mathematically demonstrated. The latter is the binding of colors and faintness of the objects produced by the interposition of a thicker or thinner stratum of damp air, or invisible mist which pervades the optical image. It is the complement of the linear perspective which aids us to judge the relative distances of objects.

Of the linear perspective we need not speak. Its knowledge is useful, no doubt, but it has no application in photography. The lens is the draughtsman and, unfortunately, it does not apparently follow the immutable laws of mathematics; its perspective is not correct, the relative distances of objects are not preserved, bringing the second and other planes towards the foreground if the focus of the lens is long, and producing the opposite defect if the focus is short.* However, the exaggerated perspective given by short focus lenses is certainly more unnatural, more objectionable than that produced by lenses of long focus, specially if the scene is photographed from a certain distance.

As a photograph should be viewed—in order that the image appears in the best, if not true, perspective—at a distance from the eye equal to the focus of the lens by which it has been made, and as the focus of vision is about twelve inches, it is advisable, for all ordinary purposes, to work with a lens having a back focus of 11–12 inches.

The aerial perspective belongs to art. It cannot be taught. It is a study of observations to make, and a long and difficult one for the painter. See the appearance of objects in a damp country, or when the atmosphere is charged with moisture: the imperceptible vapor which swims in the air gives value to the colors, softens the outlines, deminishes the contrasts in harmonizing the whole, obliterates the details as the distance increases from the point of vision: in the foreground the objects are sharp, cut on the sky, in those far distant the details appear as masses, and the mist interposed between the objects at different planes produces various degrees of brightness and distinctness.

In dry countries the distances seem deminished, the line predominates, everything stands sharp, the mountains design their architecture on a limpid sky, all is clear, luminous, and the effect is grand, impressive.

These differences in the atmospheric conditions which change the aspect of nature had necessarily a capital influence on the artists of the countries in which one or the other condition prevails. The Flemishes, those of the great school of painters of the seventeenth century, did not idealize their subjects as the artists of the ancient Greece and the Italians of the beginning of the Renaissance; their character is that of the Germanic race from which they descend, their country is not resplendent with light. They represented scenes of the real life, nature as it is with its gradations of rich colors which, in the Netherlands, the preponderent splendor of a luminous sky does not weaken, and which result from the aerial vapor which surrounds and models the objects; nature made them realists, colorists *par excellence.*

Forcibly, the photographer is a realist, he can only represent what he sees; but he works with a defective apparatus: if he operates with a lens whose aperture is not sufficiently stopped down, the first planes of the picture are sharp, the others badly blurred; if, on the other hand, the lens is stopped down with a small diaphragm, all to the most distant planes is reproduced with an excessive sharpness destroying the least aerial effect, and the result is so unnatural that it offends the eye of even the least educated artist. However this defect is more supportable than the former; and it is for this reason that the desideratum of the majority of photographers is to produce pictures of great sharpness at all the planes, regardless of realistic and artistic value.

Is it to say that one cannot remedy the optical defects in question? Certainly not. Pictures free from deformation, with a mathematically correct perspective and true atmospheric effects, are made by the use of the primitive camera-obscura, *i.e.*, with a hole of four or five-tenths of a millimetre diameter as an optical apparatus.* But, as it should be expected, the exposure-time is long, very long in comparison to that necessary to impress on the photo-film the image formed by a lens which concentrates the luminous rays at its focus. And this is a capital objection to the use of the stenope in studios, and out-doors to photograph animated scenes. Besides the image is not exactly sharp, and this is another objection for the sharpists *à out-*

* We refer here to photographs viewed at the normal focal length of the eye, for, if viewed at a distance equal to the focus of the lens, the distortion disappears; thus: a photograph taken with a five-inch focus lens should be seen at a distance of five inches, good.

* See our paper, "Photography Without a Lens," in the *American Amateur Photographer.*

rance, not for the artists of the modern school of photography.

To photograph a landscape in the best possible manner with the ordinary optical apparatus, one must take into consideration the effect of the lens on the aerial perspective when it is more or less stopped down, that is, when working with a large or small diaphragm. It has been explained that the thickness and, consequently, the opacity of the stratum of air charged with moisture, which is interposed between the objects placed at different planes, softens the outlines, obliterates the details and diminishes the contrasts, not, however, of the objects placed in the first planes, which remain sharp, well delineated, but of those in the distance, which are seen through the air stratum, and that these effects were necessarily so much the more striking as the objects were most distant.

Now, a large diaphram tends to produce the effects in question, while a very small one tends to diminish them by increasing the depth of focus, bringing the objects nearer, so to say, by placing them at the sharp focus of the lens, which then depicts all their details and their outlines as cut on the ground, exactly as if they were in the fore-planes. Hence by a proper selection of the diaphragm the atmospheric effects can in a measure be preserved with a sufficient definition of the far-distant objects.*

A yellow screen—employed with or without orthochromatic plates, and interposed, as it is well known, between the lens and the photo-plate—in subduing the more refrangible rays reflected by the opacity of the air stratum, tends necessarily to destroy the aerial perspective. However, more or less tinted yellow screens are sometimes useful to obtain distinctiveness in the distant planes, either when the air is much charged with mist, or when the objects are placed at a very great distance. It is by means of such a screen that Mr. Boissonnas has been able to obtain, with a tele-photographic lens, a well-delineated picture of the Mont Blanc, from Geneva, the distance is about 150 miles, notwithstanding the great depth of the stratum of air through which it is seen from such a distance.

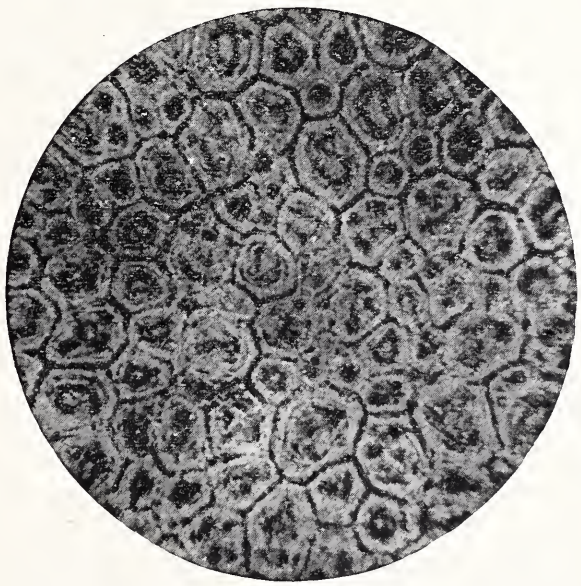
P. C. Duchochois.

*It has been proposed to produce atmospheric effects either by exposing to light, for a moment, the positive proofs on paper before toning them, etc., or by making the diapositives on very rapid gelatino-silver bromide plates in order to produce a general superficial fog; the picture appears then under a blackish-gray veil which covers it all over and, consequently, does not produce the aerial perspective which, as just said, consists in the softening the outlines, the obliterating the details, etc., so much the more as the objects are at a greater distance. Moreover, this gray veil is unnatural, unlike that produced by the atmospheric mist, invisible in the foregrounds, which let us more or less distinctly see the objects in nature, and therefore on the photograph, through a whitish fog.

PHOTO-MICROGRAPHY WITH HIGH POWERS.

With the exception of the photography of bacteria nothing of importance has been accomplished. Histological and botanical subjects have specific fields under the microscope, which must be in focus to be explicable, and drawings have been made showing, perhaps, the characteristics of two or three layers as one, oftentimes involving the complete revolution of the micrometer screw.

It was my fortune after three years of application under the guidance of the renowned microscopist Dr. C. Heitzman, of New York, to establish as a whole the existence of, first, the reticulum in growing plants: secondly, the continuity of the protoplasm, and thirdly, the direct communication between the so-called cell-walls or the interruptions in the cellulose.



The botanical side of this question is out of place in this paper, but when Dr. Heitzman asked me to make drawings for publication I refused on the ground that his own discovery of the reticulum in animal tissue had been skeptically received and scoffed for twenty years because drawings were the proof. I set to work to photograph my researches, succeeding at the end of two years, and the frontispiece is one of the illustrations of the result.

To give the details very thoroughly would occupy a great many pages, therefore I can only outline my work and dwell mainly on the more important operations and features.

The legs of the table upon which the camera, microscope and lamp rested, were screwed to the floor, and the side of the table was fastened to the wall. The reason for this was to leave the

table free from any vibration. The microscope, camera, lamp and bulls-eye were all cleated to the table so as to form one solid system. The lenses used were all dry, for the exposures with the 1/12 took from one to two hours. The lamp was a 16 candle power of ordinary make, having a flat flame, in front of which stood a bulls-eye condenser, which concentrated the rays into the sub-stage condenser. The illumination is more even if an ordinary eye-piece is substituted for the usual condensers.

The feature of my method is mainly in obtaining sharp fields of deep focus. Ordinarily photo-micrographs of 500 diameters and upwards show only one point in focus, and that point of little depth. It must not be considered that objectives of the latest formula can only be used, as mine are such as can be found in the stock of any reputable firm which manufactures good objectives. The oculars must be what are usually termed periscopic and they are equivalent to projection eye-pieces of European makers. A section of a living plant which is cut by hand may be extremely thin to the eye, but it is invariably composed of more than one layer. All of these layers cannot be in focus at the same time, but if the major part of one is sharp, the characteristics will be easily seen. To obtain a sharp image on the plate involves a correct diaphragm in the right place and it is upon this that I will dwell in this paper.

Into the stage of the microscope I had a revolving disk of metal sunk containing apertures from half an inch in diameter to the size of the eye of a needle. These apertures were accurately centred. The top of the disk was on a level with the stage, consequently the slide containing the section was as near the diaphragm as it is possible to get it. The diaphragm of the smallest aperture is the one to use for photo-micrography, no matter what is said to the contrary, and I am convinced that no portion of the tube, ocular or lens, should be obstructed by a small diaphragm. It is an error beyond question to place a diaphragm elsewhere than between the light and the lens, and the result of my experience, limited though it has been, demonstrates that the diaphragm should be as close to the object as possible. One difficulty is in moving the diaphragm disk, for the slide being in contact with the disk, the slightest motion will change the field of vision. To obviate this it is practical to glue two strips of cork $\frac{1}{32}$ inch in thickness to the bottom of the slide at both ends, and these strips of cork raise the slide high enough above the diaphragm disk to allow of free motion, but enough light is lost in the raising of the object to make a difference, of some time, in the exposure. Between the sub-stage and the object it is well to interpose a thin sheet of mica or a bath of alum, for this effectually prevents what little heat is generated at the condenser from expanding the object. All my botanical specimens are mounted in glycerine, and the heat would swell them or cause them to oscillate in their medium. The detrimental effect of this would be obvious. Instead of the condensers of usual pattern, it is much more satisfactory to use an ordinary Huygenian eye-piece, as it produces a field of more even illumination.

The value of the photo-micrographs of pathological subjects is inestimable. If for instance a book treating on the diseases of the kidney contained a photo-micrograph, of a specimen of chronic nephritis, of standard amplification, a physician could use the illustration as a comparison and the relative sizes of a blood corpuscle, pus corpuscle, kidney epithelium and bladder epithelium, would leave no doubt in his mind as to the diagnosis of the specimen before him. Photo-micrographs of such diseases like sarcoma and carcenoma would be more certain on comparison, but drawings of such subjects have not been generally accepted, as one scientist frequently accuses the other of seeing things under the microscrope, and transferring them to paper, which only existed in the mind's eye. Photography can effectually dispel this for the lens will photograph the object, no more ; no less.

The illustration accompanying this paper is a photo-micrograph of a section of vegetable ivory magnified 750 diameters. The objective used was a Bausch & Lomb 1-12 student series, and the ocular a perescopic 1 inch specially made. Gratitude impels me to use this opportunity to thank this firm for the care they exercised in making some of my eye-pieces, and for the faithfulness with which they executed the alterations on my stand.

Maximilian Toch

INSTANTANEOUS PHOTOGRAPHY.

(This amusing account of the marvels of the modern camera was translated for *Romance* by H. L. B. Porter from the French of Ferdinand Fleury.)

In a discussion between several learned gentlemen concerning modern inventions and the marvellous appliances of science, James Beaufranc, a great, brown, boyish fellow, with a merrier countenance than is generally considered to be becoming to a professor of mathematics, was asked to tell in his turn what he thought was the most useful discovery of the human mind.

"What! you dare to pretend that the greatest wonders of modern times are steam, explosives, electricity, and I know not what! As if it were a pleasure to travel so fast that you cannot enjoy the scenery on either hand; to speak through the telephone to a person whose face you cannot see; or to have your tooth pulled out, even without pain, by a wad of some mysterious chemical, come from God knows where! In truth, you gentlemen, though you are reputed to be very wise, appear to me very foolish."

The paradoxes of the young professor caused a general smile, but James Beaufranc continued imperturably:

"My own idea is that inventions are valuable only in direct ratio to the happiness which they procure. That is why I find your railroads odious, your cannon monstrous, your dynamite absurd. And for other reasons I find but one laudable modern discovery, one which is universally beneficial, a science which is also an art."

"And what is it?"

"Photography."

There was a great shout of laughter. Decidedly Beaufranc had not his equal for pleasantry.

However, with astonishing coolness the young professor continued:

"Yes, photography, which does no harm to any one, but, on the contrary, much good; which makes to live again at our fireside, immortal as their memory, the cherished features of relatives long departed; which consoles in the absence of the dearly beloved; and to which, besides, I owe my marriage."

There was a great silence at this point, and intense curiosity was depicted upon the countenances of Beaufranc's hearers.

"I bought," he continued, "as soon as they appeared, one of those instantaneous cameras. It is no larger than an alarm-clock, and perfectly light and portable. You can hide it under your overcoat, under your arm, within your waistcoat, almost anywhere. When you wish, you touch a button, and presto! everything before you is found imprinted upon the film for all eternity.

"How many times have I opposed to the denial of scholars, complaining of the injustice of punishment, a photograph taken at the moment their arms were raised to hurl at my head the paper missile! But I must come to the story of my marriage.

"I was a professor in Amberville College, and I lived in a little apartment on the ground-floor. Opposite my house was the large, ornamented sign of Mr. Pradoux, the notary, to-day my father-in-law. Close beside his desk, the window of his library opened opposite mine, and across the very narrow street I could see, as well as in my own room, all that passed in the house of my neighbor. Indeed, from the first day I could see but one thing, his daughter, Valentine. She came and went all day long, for she attended to the housekeeping, Mr. Pradoux being a widower. She animated with her cheery smile and her fresh gayety that paper-strewn interior in a way that was truly adorable.

"Pardon this panegyric upon my wife—but she was then in the marvellous brilliancy of eighteen years. Her first appearance was to me a blow from which my heart never recovered—a blow that only those psychologists deny who have never experienced it.

"Alas! from the first day this insurmountable love seemed to me what it must have seemed to any reasonable being, foolish, senseless, useless, and doomed to perpetual disappointment.

"Mr. Pradoux was rich, very rich, and I had, to offset his money-bags, only thin diplomas, and appointments yet thinner. There I was, shut up alone with my love, silent as in a sanctuary, satisfied only to look with innocent and distant adoration upon the beautiful Miss Valentine.

"One day the audacious idea came to me of instantaneously photographing her, and at least preserving her image. I carried my little machine to the window-sill, and carelessly, in the most casual manner, I photographed my pretty neighbor, at the precise moment when she was embracing her father. At another time I caught her while she watered her flowers at the window.

"In short, within a month I possessed an original gallery, a true museum of my dearly beloved. With her were pictures of a great many people who had spoken with her in her father's library at the moment of my operation; and very often I turned over my precious collection, happy to possess it, but filled at the same time with a terrible sadness.

"One day I did not see Miss Valentine. I learned that she was ill. In the week which followed, another portentous rumor reached me. Mr. Pradoux was, or was going to be, ruined by a banker of doubtful reputation, who had risked and lost a fortune in a bad speculation. It was even said that criminal proceedings were about to be instituted against Mr. Pradoux. The trial would take place at the Civil Tribunal. I hastened to be of the audience. Mr. Pradoux appeared to be very much cast down, but his countenance to my mind expressed innocence and honesty.

"Soon I had heard all of the testimony on both

sides. The business could be summed up in a few words. The banker had deposited a large quantity of valuable papers with Mr. Pradoux, and he pretended that the lattter would not return them to him.

"Mr. Pradoux affirmed on the contrary that he had given them from his own hand into the hand of the banker, who had called for them in his library. But Mr. Monquero denied the visit, and there were no witnesses. Miss Valentine was ill, and, even had she been well, her testimony, being prejudiced, would have been illegal.

"The trial was about to close, probably to the condemnation of Mr. Pradoux, when his adversary turned to the public with a triumphant look. Immediately I recognized that head, for had I not seen it often?

"But where? I felt that it was a question of capital importance. Suddenly light shot through my mind. That figure was registered upon one of my numerous instantaneous photographs of my neighbor's library.

"Yes, this visit that he denied, he had made, and the Tribunal ought to know it.

"I leaped to the advocate's desk and briefly told him my story.

"In a few minutes I had reached my home, and returned to the Tribunal, breathless, but waving a paper in my hand.

"I was not deceived, the resemblance was striking. Mr. Pradoux. leaning one hand upon the window-ledge, was holding in the other a bundle of papers toward Mr. Monquero.

"You can easily divine what followed.

"The Tribunal released Mr. Pradoux in a fortnight, and exonerated him from blame; the dishonest banker put the Belgian frontier between himself and justice, and Mr. Pradoux invited that same evening to dinner his providential savior.

"Miss Valentine, still suffering, but more charming than ever in the pallor of convalescence, rushed toward me.

"You have saved the fortune, and, what is far better the honor of my father," she said, as she extended to me her hand. Nothing, absolutely nothing, can testify our gratitude."

"But if—" interrupted I, "but if——" and, deciding at once upon my course of action, I drew Mr. Pradoux into his library, where I related to him the secret of the photographs, my love, and my hopes.

"I will abridge. Two months after this interview,, Miss Valentine and I were married."

James Beaufranc stopped and shot a look of satisfaction towards his amazed friends.

"Behold!" said he sententiously, "how photography makes marriages!"

"Yes!" cried one, "instantaneously!"

DRY PLATES VERSUS WET.

THE dry plate is certainly one of the greatest and most improved mediums in the art of photography, and deservedly so: 1st. Their extreme sensitiveness and rapidity of action; 2d. Their handiness in the portrait gallery and in the field—being always ready and waiting—and their ability to give pictures where, in any other process, it would be utterly useless.

Having spoken, so far, of their advantages, we now come to their drawbacks: 1st. Their uncertain and eccentric manipulation and impractical development. Because I most unhesitatingly assert that no operator can develop a dry-plate negative under a deep ruby light and obtain the degrees of intensity—because it cannot be seen through the fixing film clearly—and with certainty to distinguish what the quality of the negative may be when fixed. Therefore, I can prove that the manipulation of the dry plate is a haphazard—and not practical. And there is no yellow light but has its fogging propensities; and upon a close statistical comparison you will find three-fourths of the dry-plate negatives, taken in any country or light, that they are thin, weak films, yielding blurry results; the lights cloudy, the half-tones dim and uncertain, and the shadows chalky; or, on the other hand, befogged with intensity, and impotent; the result of an unpractical development—which I consider to be all chance-work throughout. That some of the finest tone-yielding films by the dry gelatine plates have been taken I do not deny. But I declare them to be the result of accident rather than that of practice.

Now with the old collodion wet negatives it was very different. The preparation of the plate, and its development, all through, was based on a thorough and complete practical foundation. The density of the negative according to its exposure could be clearly and certainly established all through, and its density regulated so as to yield those films giving the richest variations of light and shade—on the silver print of the deep bronze of permanency—that cannot be obtained by the gelatine negative, and that no other process or chemicals will yield. I am still of opinion that a still greater improvement is required, and in

progress, in the gelatine plate, to make it more practical in its working and results, to make it and establish it the photograph of the future.

Dry plates has two missions, it has exalted the art on one hand, and on the other it has belittled it, and commonized it commercially to the lowest degree, by placing it in the hands of everybody, which has flooded the profession with amateurs. But I must stop here to pay a noble tribute to the many noble amateurs that have adorned our art and made it what it is by their researches, and purses, very different from the army of loafers who hang on to degrade it by their malpractices. Twenty years ago we had no amateur outfits, Kodak or detective cameras, which are now as numerous as the day of the year, and one of them may not be remembered in twenty years to come. Changes is everywhere apparent with revolving time, and the deterioration of professional photography is everywhere visible, numerous galleries in our great cities are already closed, can be bought for a song, or opened in some other industry, even the voices of street arabs are no longer heard shouting the merits of the punny celebraties, photographs, having closed for want of patronage, and just as we exult or commonize ever so noble an art, so sure will it rise in regard, or sink into obliquity. If the streets of London was paved with diamonds such a thing as a diamond ring would be unknown, But the great natural school of photography is looming in the distance where a professional course will be guaranteed to its pupils, and where pupils will be professionally and legally qualified and licensed to practise the art of photography, as in other professions. Then, and then only, will unlimited amateurism and itinerancy die out by either an actual suicide or natural death. Twenty years ago gelatine plates was an improbable theory, now they are universal, and may not be remembered in twenty years to come, and probably superseded by highly sensitized starches developed by the fumes of mercury or other mineral vapors.

H. C. Wemyss.

Correspondence.

SHUTTER SPEED.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I have just read with much interest Mr. Starnes' article in your issue of March 17th, entitled "Shutter Speed," and I must say that I fail to agree with him in his opinion of Mr. English having "vastly underestimated the speed of his shutter."

He seems to base his calculations upon the "cyclists" having passed the camera at a right angle with the longitudinal axis of the lens tube, when in fact they passed at an angle (judging from the appearance of the picture) of about twenty degrees, which would bring the actual movement upon the ground-glass near what he claims to be the limit to procure a "sharp" picture.

I enclose a print made from a negative, taken of an express train moving at a two minute gate, (which is faster than the cyclists were going) with a ten inch focus lens, distant thirty feet from engine. Seed plate, 26 sen. exposure $\frac{1}{50}$ of a second, and you will observe it is fairly "sharp," but if the shutter speed had been increased four fold, or to $\frac{1}{200}$ of a second it would no doubt have been perfect in this respect. Mr. English certainly has reasons to feel proud of his success and he has furnished us an example of instantaneous work that is worthy of our emulation.

Frank H. Morse.

SAVANNAH, GA., March 21, 1893.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: Will you kindly permit me to say, that I think Mr. English deserves considerable credit for the masterly way in which he produced the Bicycle Photos, reproduced, I think, in your issue of March 3d. For they certainly were well done, and probably did not do the original photos full justice at that.

I imagine that Mr. English is a close student of photography, and is probably one of those photographers who does not consider their works good enough, but constantly strives to do better. He certainly is quite successful.

Yours respectfully,

E. L. Crittenden.

DETROIT, MICH., March 24, 1893.

CREDIT WHERE CREDIT IS DUE.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: *The American Amateur Photographer* for March, 1893, contains the following article, entitled:

A MERCURY INTENSIFIER.

"Considerable has been said on mercury intensification, its chemical and other characteristics. There are many formulas, but one of the simplest is the iodide of mercury, used as a single solution. Into a solution of bichloride of mercury is poured a solution of iodide of potassium, which immediately forms a brick-red precipitate, but the iodide is continued to be added until the precipitate is redissolved. If the dry negative is immersed in this cleared-up solution, intensification begins at once, and may be stopped at any desired point by washing the plate with water. The trouble generally with such plates is that, unless the hypo is thoroughly eliminated, the shadows are inclined to become yellow.

"Mr. H. J. Newton, discovering the reason for this, finds the remedy in immediately immersing the plate after intensification (without washing) for a minute or two in a weak solution of hypo-sulphite of soda. It disposes of any tendency to yellow, and leaves the negative clear, and bluish in color. The proportions of the mercury and iodide are as follows:

A

Bichloride mercury	60 grains
Water	10 ounces

B

Potasium iodide	180 grains
Water	2 ounces

"Solution B should be poured into A."

Permit me to protest against the use of the word "discovering" in the above article in connection with Mr. Henry J. Newton, as he really discovered nothing in this connection, as I am prepared to show.

On pages 49 and 50 of "The Photographic Instructor," third edition, occurs the following passage, which will explain itself:

"The plate must be thoroughly washed, and subjected to the action of iodide of mercury solution, first proposed by Mr. Edwards, and of which we give a modified formula. Dissolve 1 drachm of bichloride of mercury in 7 ounces of water, and make another solution of 3 drachms of iodide of potassium in two ounces of water. Pour small portions of the iodide solution into that of the mercury, till the red precipitate formed first is thoroughly redissolved, and the solution is clear and colorless.

"For use take 1 ounce of it to 3 ounces of water, immerse in it the negative, when its density will at once begin to increase and build up to the desired point. When of sufficient printing quality, wash in pure water for a few minutes, when the deposit will turn to a yellow color. The application of a hyposolution in the proportion of 1:30 will restore it to an agreeable brownish-black. Finally give the negative a thorough washing."

This book is in large part a compilation of the lessons prepared originally for use in the Corresponding Class of the Chautauqua School of photography which opened in 1886. As stated in the preface of that book I wrote many of those lessons,* among them the one from which the quotation is made.

I first applied hypo in the above-described manner as early as 1881, when I was operator in Mr. Gubleman's studio, and at once adopted it on account of its efficiency. I publicly demonstrated it, either before the Photographic Section of the American Institute (of which Mr. Newton is and has been President), or before the Association of Operative Photographers of New York, I forget now which. Later it was incorporated with the Standard Formulas published in "The American Annual of Photography." It therefore becomes apparent, not only that Mr. Newton did not discover this process, but that it has been publicly credited to me for many years.

Very truly yours,

Charles Ehrmann.

NEW YORK CITY, March 25, 1893.

ABSTRACT OF A LIST OF THE MORE IMPORTANT CHANGES IN THE SPELLING AND PRONUNCIATION OF CHEMICAL TERMS, RECOMMENDED BY THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, WITH THE REASONS THEREFOR.

ELEMENTS—*Aluminum* is spelled in the shortened form in deference to the wishes of technical chemists, on account of the growing importance of the metal in manufactures.

Sulfur is modified in accordance with the general phonetic simplification going on in our language. The new form brings us into accord with the French, German and Italian usage. The replacement of **ph** by **f** is carried out in all the derivatives. (It has not been deemed advisable to yield at present to the wish of many, that a similar change should be made in the spelling of phosphorus, as the German and French languages still retain the **ph**.)

The termination **-ic.**—This is used for metals only when there is a contrast with **-ous,** thereby avoiding several non-euphonious terms, and bringing us into accord with the British custom. Thus avoid aluminic, zincic, strontic, etc.

The termination **-ol.**—This is used exclusively for alcohols, and all alcohols receive the termination. This also is in harmany with British usage, and brings about a most desirable simplification and uniformity. Thus, glycerol, quinol, etc.

Termination in **-id.**—The final **e** is dropped from all chemical terms formerly ending in **-ide,** and the pronunciation is always -ĭd.* Of the three pronunciations of this termination— -îde, -ĭde, and -īde—in varying degrees of use amongst us, the second appeared undoubtedly the most preferable for the following reasons: -îde is an uncommon, almost unnatural pronunciation of the vowel in our language, although it would bring us into unison with European usage and simplify phonetic values for the ears of foreigners; -īde leads frequently to confusion with -īte (sulfīde and sulfīte) and is the value of **i** farthest removed from European usage; -ĭd approximates closely to the continental îd—into which it is easily lengthened—is readily recognized by the foreign ear, is not confused with termination -īte, is in line with present phonetic progress, and has the backing of authority and usage. The short sound of **i** naturally dictates the dropping of the final **e.** ("According to Smart and Cull, chemical terms ending in **-ide,** as bromide, chloride, etc., should be pronounced with **i** long; but all other orthoëpists are unanimous in making the vowel short; and the propriety of the latter mode of pronunciation is established by the fact that this whole class of words is not unfrequently spelt without the final **e,** thus bromid, chlorid."—Webster's Dictionary, edition of 1864 and 1884, Principles of Pronunciation, p. xliv.)

Terminations in **-in.**—In the names of chemical compounds, including all those formerly ending in **-ine** (except the small group of doubly unsaturated hydrocarbons, as propine), this termination is always pronounced ĭn and is never followed by an **e.** In this case much the same reasons as those given in the preceding paragraph dictate the uniform use of -ĭn, and not only authority, but modern usage is even more fixed in the employment of the short **i,** so much so that the change practically amounts to simply dropping the final **-e** when following **-in.** The only objection to be raised against the innovation is that based on the recommendation of Watts some few years since, that basic substances should terminate in **-ine** and neutral substances (*viz.,* glycerids, glucosids, proteids, and bitter principles) in **-in.**

Terminations in **-meter.**—Words in this class used in the metric system are regarded as compound words, and each portion retains its own accent mil′lime″ter,† Of the two authorized forms of accentuation, it was deemed better to retain this and exclude completely the other (*viz.,*

* "To Professor Ehrmann is also due the credit for contributing most of the lessons in this book, for he originally wrote the greatest part of them." Preface of "The Photographic Instructor." New York: The Scovill & Adams Company.

* Fāte, făt, fär, mēte, mĕt, pīne, pĭn, marîne, nōte, nŏt, möve, tūbe, tŭb, rüle, mẏ, ў=î.

† Primary accent; ″secondary accent. N. B.—The accent follows the vowel of the syllable upon which the stress falls, but does not indicate the division of the word into syllables.

the uniform laying of the accent on the antepenult), because the former is of help to foreigners using our language and *vice versa*, while the practice accords with the general rule for the retention of the primitive accents in compound words.

Derivatives of *Valence*.—The Latin prefixes are used invariably to the exclusion of the Greek, in accord with the recognized principles of word-building in our language.

Arsin, *Stibin*, *Phosphin*, *Hydrogen*, *Sulfid*.—These shorter terms, long since adopted by many chemists, now supersede completely the cumbersome arsenuretted hydrogen, etc. (It is to be hoped that the simplification may soon be carried a step further by the introduction of sulfin, selenin, and tellurin.)

Gramme.—The retention of the **-me** of the French spelling may seem ill to accord with principles of phonetic reform actuating many of the above changes. It is, however, dictated by reasons of prudence, so long as the metric system is used side by side with the old apothecaries' series of weights and measures. When the transition-period is over, and the latter system is effectually displaced, the simpler form will unquestionably be adopted. It is obvious to all that the marked similiarity in sound and spelling between the words *grain* and *gram* could easily lead to mistakes of the gravest nature, and as a matter of fact a number of deaths have already been caused by either mere inadvertence or by the omission of the dot over the *i* in *grain*.

The following quotation from an article by Professor Edwart Hart, in the *Journal of Analytical and Applied Chemistry*, is of interest in connection with the above:

"These proposed changes were carefully canvassed with those gentlemen who have made the English language their life-study and who were unanimous in favor of them. They were made the subject of a number of reports to the American Association for the Advancement of Science and were favored by a large majority of those present. In drawing up the report the committee sought and obtained the opinions of a number of chemists not members of the association, and so far as it was possible to obtain an expression of opinion the recommendations voice the wish of American chemists."

In the article from which this quotation is taken occurs the passage: "Man is a conservative animal and does things in a certain way because he is accustomed so to do them. This conservatism increases with age until it becomes almost impossible to shake it off." In the face of these fundamental truths one hesitates to express an opinion on the recommendations of the American association, fearing that to differ may be to proclaim one's self an ass, and the ass is even more conservative than man. This spelling, as every one knows, is a hard subject to deal with, and the Committee of the American Association deserves much credit for the care they have given to their work. Their recommendations seem on the whole to be wise, and it would, perhaps, be well if every chemist would adopt them. There is one chemist known to the present writer who is willing to acknowledge that he doesn't like "sulfer," but he is also willing to acknowledge that this is no argument against it.

One of the advantages which the committee mention under the head of **-ci** is "bringing us into accord with the British custom"; and their recommendation as to **-ol** "also is in harmony with British usage and brings about a most desirable simplification and uniformity." If conformity to British usage be advantageous, then why, it may be asked, should we be advised to fly directly in the face of British usage by dropping the final **e** "from all chemical terms formerly ending in **-ide**"? **-id** may be just as good as **-ide**, but is not uniformity worth much? Then, again, **-ine** has been growing in favor of late years as signifying basic properties, and it seems to the writer that in contracting to **-in** we lose more than we gain by giving up the **-e**. Perhaps a joint committee of the British Association and American Association might reach some conclusion of value. The question as to the use of the final **-e** is, however, one that will not be settled by any committee.—*American Chemical Journal, per Pharmaceutical Era.*

Notes and News.

C. H. Graves has succeeded the firm of Fellows & Graves, and will continue the business as heretofore at No. 24 North 9th Street, Philadelphia, Pa.

"**The Times** comes to hand regularly and I can't get along without it. I am an amateur of about eighteen months, and take great interest in the work," writes Mr. F. H. Morse, of Savannah.

Self-Development.—Stiggins: "How much brighter young Jones has become since he joined the camera club."

Higgins: "That's because he passes hours in a dark room, developing himself."—*Wilson's Photographic Magazine.*

"**A book by H. P. Robinson** is always profitable reading as well as entertaining, and this is true of his latest work, "Picture Making in the Studio," just published as No. 42 in the Scovill Photographic Series. It is not, as might be supposed from the title, a technical, nor, in the ordinary sense, a practical work, but a series of essays pertaining to the subject; yet there is in it much valuable advice and many helpful suggestions. We like Mr. Robinson's books, because a busy man may read them for relaxation, and at the same time learn much of the art of photography, which can be of great assistance in the improvement of his work, be he amateur or professional."—*The Photo American.*

Bits of Photographic News.—This week will be a most interesting one for the Society of Amateur Photographers in this city. Tuesday evening at the stated meeting the question of adopting a new amendment to the Constitution reducing the annual dues of the society to the old rates, $16 a year, will be considered. The President, Mr. R. A. B. Dayton, on his own responsibility, has sent out a letter to every active member explaining in detail the present financial condition of the society and showing why the old dues of $16 are enough to carry the society successfully along. He asks each member to indicate by postal card the amount of annual dues he is in favor of.

It is found that so far a majority are in favor of the old rate, but whether they will materialize to vote at the meeting is a question.

Wednesday evening the first annual members' exhibition opens at the rooms of the society with about 600 frames by between forty and fifty members. The room has been specially fitted up, and will be lighted by electric light day and evening. It will be open to members and friends, cards of admission being required. The judges were here yesterday and inspected the prints. They are Robert S. Redfield, of Philadelphia, Alexander Black, of Brooklyn, and James L. Breese, of this city. The results of their examination will be announced at the beginning of the exhibition. A very tasteful medal has been designed to be awarded to the successful winners.

At the New York Camera Club an exhibition of members' work and the *Forest and Stream* amateur photographers' contest pictures begins to-morrow evening and terminates on Saturday the 18th.

The illustrated lecture on "The Suburbs of New York, by Amateur Photographers," given by Mr. F. C. Beach and Mr. A. L. Simpson before the Bowery Young Men's Institute, was greatly appreciated by the young men, and included a number of contributors. Mr. Beach has been invited to repeat the lecture before the photographic department of the Brooklyn Institute on March 27th.

Miss C. W. Barnes is at work on her negatives of Scotland, and has been invited to lecture before the Buffalo and Worcester Camera Clubs. She expects to send quite a collection of prints to the Philadelphia exhibition next month.

Mr. William B. Post lately won a silver medal, the highest award offered for marine photographs by the English Hackney Society, and Mr. C. B. Moore, of Philadelphia, won a similar medal for his "Tickled to Death"—a group of darkies—picture at Calcutta, India.

Mrs. D. M. Stevenson, of Chicago, has one of her flower pictures, entitled "Tulips," as the frontispiece in last week's PHOTOGRAPHIC TIMES. The picture was reproduced from a silver print and is of marked beauty. Mrs. Stevenson was the first woman in Chicago to do anything with amateur photography. She was President of the Woman's Photographic Club. and is now a member of the Woman's Committee of the Congress of Photographers to be held next August, at Chicago. Mrs. Stevenson has photographed in Europe, and in California made hundreds of negatives of Pacific Coast scenery and flowers. Photographing flowers is her specialty.—*New York Times.*

The Book of the Future.—The time has come when, for the first time in the history of the world, any lines drawn or written (in black ink on white paper) can be reproduced in metal, in "relief," on blocks without wood engraving, blocks from which thousands of copies can be printed. There is no occasion to go further into details; once realize the fact that your handiwork can be made to appear clearly on the printed page (with little more expense than type-setting) and you, the young author, student, man of letters, will give us in the future more of your interesting personality. The thoughts may flow as before, but the vessel to receive them and convey them to others shall have its hall-mark of individuality. Thus in the future the distinction will be clearly drawn between the work of the student on the one hand, and the journalism, hack-literature, and "penny dreadfuls," on the other.

Type-setting and uniform printing of words by the thousand will be used as heretofore for all works requiring speed—for journalistic, scientific, historic, and scholastic purposes for the printing of works of reference, and all bulky volumes, but the author—for want of a better word—the poet, or the scholar who gives a book to the world should free himself, as much as possible, from mechanical trammels, and boldly set to work to present himself in appropriate guise. The distinction once made, the advantages will be obvious. The author need not be deterred by apparent difficulties, nor by the many failures of reproducing handwriting in the press; any failures in future will arise generally for want of knowledge and care on the part of the writer. The beautiful *photographic processes* which have been perfected during the last few years will fac-simile a page so accurately that it is wonderful that so few of our artistic countrymen have availed themselves of the system. Had such photographic engraving processes as those now in use in France and Germany been in existence in the time of the early engravers, there would probably have been no such thing as wood-engraving, for the chroniclers and artists, from Dürer to Bewick, would have hailed the new methods with delight. What we might have lost or gained artistically must not be considered now. The question is how to make the best use of modern appliances, and how to rouse an interest in them among authors.—*From a Lecture at the London Institute by Mr. W. Blackburn.*

Hoboken Camera Club Election.—The regular annual election for officers in the Camera Club took place at the club house. It was a largely attended meeting and very enthusiastic. The election, together with much other important matters, occupied the attention of the club until late. The election resulted in the following choice: President, A. J. Thomas; Vice-President, C. Sudhaus; Treasurer. J. H. Kaltenbach; Secretary, L. F. Wolff; Custodian, A. Wolff; House Committee, F. A. Muench, A. L. Smith; Trustees, Frank Child, A. Beyer, P. Junck.

Some very important changes in the Constitution and Laws were made by which some privileges are granted to associate members, and the dues were equalized. A very desirous improvement will shortly be made in the billiard room whereby more space will be secured by the removal of a partition and another table will be put in for the convenience of those members who do not play pool but indulge in billiards.

The club is in an excellent condition, some fifteen new members having been recently elected, and the photographic work for the summer promises well. Among the new members are H. P. Heydt, Eugene Finck, C. W. Cowan, L. F. Wolff, C. E. Crevier, B. G. McCague, F. Hoormann, E. Byer, A. Machold, E. Leonard, F. Trautwein, A. Roelker.

Real Misery.—"Do you know, Mr. Dryplate," said she, earnestly, "I think that the persons who suffer most on earth, and the ones who have the greatest troubles, will meet with the greatest rewards hereafter?"

"Then there must be something good in store for me."

"Have you had much trouble?" she inquired, sympathetically.

"Have I?" and Mr. Dryplate's frame quivered with emotion, "I have made a specialty of taking photographs of babies."—*Wilson's Photographic Magazine.*

HELMOLD'S "FIRE-PROOF" FOR DRYING NEGATIVES BY HEAT AND HARDENING GELATINE CHLORIDE PRINTING-OUT PAPERS.

A Great Find.—Simple, ever reliable, and "handy as a jack-knife." This latest of laborers and helpers in the photographic vineyard seems to have gained the favor of the craft at a bound.

From what we have seen it do for negatives we are convinced that it has become a necessity. Once employed, it will be an ever-present servant, like the developer, fixing bath, silver, or any standard requisite in the gallery. Its usefulness in preparing negatives for quick drying by artificial heat is generally understood and appreciated by this time. Not so well known, perhaps, is its usefulness in the omega or aristo-paper process.

The liability of these papers to soften in the different manipulations has deterred many who, but for this one drawback, would long ago have discarded albumen paper in their favor, as in every other respect their superiority over albumen paper is admitted by many.

Mr. Helmold's hardening solution overcomes this trouble of the softening of the coating of these papers completely. Its substitution for the hyposulphite of soda (same proportions) in the combined toning-bath, leaves nothing to be desired, making them far more enduring than any albumen paper, it is claimed. In the use of separate toning and fixing baths, Mr. Helmold's "fire-proof" takes the place of the fixing bath, making the final result as satisfactory as with the combined bath, if the prints are handled with proper care in the toning.

We have seldom watched the workings of a new discovery with so much surprise and gratification. Its perfect action and usefulness was at once apparent. We saw that here was a step taken in the right direction, and a long-felt want supplied. It does all it claims; it renders negatives dryable, by heat, and prevents the softening of omega or aristo printing-out papers. You will get comfort from it if you adopt its use.

HOW TO MAKE NEGATIVES "HEAT-PROOF."

One of the greatest drawbacks to the dry-plate method of making negatives has always been the long time required for them to dry, and another drawback has been the necessity of varnishing them if any considerable quantity of prints were required. We have from time to time been given formulas for hardening solutions. Negatives treated with these are claimed to admit of boiling water being poured over them without damage. One of the best of these methods is given by the Cramer Dry-Plate Works in their directions for working their plates.

In practice this method has been found to do all that is claimed; but more than it would do has been needed, namely, a hardening material which would render negatives dryable by heat, like wet-plate negatives or tin-types. A method for doing this is claimed by Mr. A. Helmold, a veteran photographer, by the use of which, he says, gelatine negatives are rendered so that heat will not melt them in drying. What he means practically is that negatives treated with his solution, simply immersed in it and washed, may be dried at once by heat, and as quickly as is desired, taking care, however, not to break the glass by the heat.

In other words, heat will not cause the gelatine to melt and fall upon the floor, or to disappear, or to frill, and negatives treated by his method need not be varnished. Any quantity of prints may be made from them without the least fear of abrading. The ingredients for the solution are supplied dry in bottles, and need only to be dissolved in water. If a solution of one gallon, say, is made, that quantity of water is required for one bottle of hardening material. Pour it into a dish. This solution may be used repeatedly as long as it is clean and strong enough. More than 100 5 x 7 negatives may be rendered fireproof by one gallon of solution. The negatives should first be well fixed, and then, with or without washing, placed in the solution for ten or fifteen minutes. It is more economical to use only part of the gallon of solution at a time till exhausted and dirty, enough to cover the plates to be treated, and so on till used up. They may be placed in the solution at once without first fixing; but the other way is better and as expeditious, as the solution acts more slowly than hyposulphite of soda. After treatment the negatives should be washed, allowed to drain, then dried by heat, the same, and just as readily, as by the old wet-plate process. Less washing is required, however, as the film in hardening expels the hypo more readily.—*From Photographic Mosaics for* 1893.

Photographic Societies.

THE PHOTOGRAPHERS' ASSOCIATION OF OHIO.

At a meeting held by the Executive Committee at Columbus, March 13th it was decided to hold the next convention of the P. A. of O. in Wiertwein's Hall, Columbus, Ohio, on August 8th, 9th and 10th, 1893.

Wiertwein's building was selected as a place of holding the meeting because of the many advantages it affords over any other hall the Association has ever had in which to hold their meetings. The hall is well lighted and affords ample space in which to hold the meetings and for the displaying of all pictures, together with plenty of excellent space for the manufacturers and stockholders.

The meetings promise to be of unusual interest, some new features will be brought forth. There will be entertaining and instructive papers read by leaders in the profession. Discussions of an instructive nature will be had,

The meeting for Wednesday evening will be of a social nature, a fine lunch will be served free to all members of the Association, and a very pleasant time is looked for upon this occasion.

One of the main features of the convention will be the display of cabinet photographs. The executive committee ask and expect six cabinet photographs from every photographer in the State, whether he be a member of the Association or not. These cabinet pictures are to be mounted on mounts without the name of the photographer on the face of the same—name should appear on the back only—and are to be selected from negatives taken since the last State convention. They may be framed or tacked upon a small display board or may be sent loose at the pleasure of the sender, but in all cases should reach Columbus by August 5th, addressed to the Secretary, all charges for transportation having been prepaid. The Executive Committee have set apart a large room adjoin-

ing the main hall in which this special cabinet display will be arranged and there will be room for all. Each display in this department will be numbered in the order in which it is received and the number only will appear on the display. There will be a committee of three competent judges selected by the Executive Committee who will go over these several displays, each member of the committee going alone, will give a fair rating according to his judgment of each display, reporting the same by number on a blank which will be furnished for the purpose, to the Secretary, giving the rating. The three reports of the judges will be added together and their average ascertained, thereby giving each display a fair rating which will be of great benefit to the maker of the cabinets. This is a good chance for us to find out our weak points and keep them to ourselves if we choose, and when we go home strive to improve. There are photographs turned out from galleries which may be excellently handled in making, in one branch, that is, either in the lighting, posing, retouching, or chemical effects, and then almost a failure in some other points.

So let us show our six cabinets; it costs us nothing and we may learn our weak points and improve by it. These cabinets will be returned to their owners together with the judges' ratings, after the convention is over.

The Executive Committee have been particularly fortunate in having furnished them free of charge, by the manufacturers and dealers, whose names are mentioned below: J. C. Somerville, of St. Louis, offers one No. 6 Somerville symmetrical lens, valued at $75; G. Cramer, 5 cases plates any size or brand; Simpkinson & Miller, of Cincinnati, Ohio, one 12 x 16 premier lens, valued at $50; M. A. Seed Co., $20 worth of plates; Hammer, Althams Co., one case 5 by 7 x F plates; E. H. T. Anthony & Co., one complete set of 5 volumes Anthony's International Annual; Kimball & Matthews, Columbus, Ohio, one K. & M. position chair, value, $10; Chas. A. Gump & Co., one necktie camera, value, $20, and O. H. Peck, Minneapolis, Minn., one gross Columbian collodion paper to every one of either first or second prize. All are useful articles and have been arranged in the list of awards or prizes to be offered for displays of work at the convention. The list will be published soon.

Everything seems to indicate a successful convention. Dealers and manufacturers are already inquiring about space and many photographers have expressed a willingness to make displays.

L. C. Overpeck,
Secretary.

Record of Photographic Patents.

493,365. Ground-Glass Adjuster for Cameras. Garrett W. Low and William Shakespeare, Jr., Kalamazoo, Mich.

493,426. Apparatus for Exhibiting Photographs of Moving Objects. Thomas A. Edison, Llewellyn Park, New Jersey.

493,747. Photographic Camera. Hiram A. Benedict, Brooklyn, N. Y.

494,022. Photographic Printing Device. Wilhelm Ohse, Dessau, Germany.

494,097. Photographic Camera. Joseph A. Davison, Polo, Chicago, Illinois.

TRADE MARKS.

22,666. Albumenized Paper. The Scovill & Adams Company.

A DOUBLE RESEMBLANCE.

"I saw the photographs, they were quite like him."
"Did he pay for them?"
"I don't know."
"Well, if he didn't, it would be quite like him, too!"

Queries and Answers.

50 TERRE HAUTE.—Can you kindly answer the following questions in your columns?

1. Can Carbutt's orthochromatic plates be used in general landscape work in place of the regular plates?
2. What is the best sensitometer to use for the above work?
3. Can they be developed well with the regular hydro formulas?
4. How do they compare with the same grade of regular plates in rapidity?

50 *Answer.*—1. Carbutt's orthochromatic plates can be substituted for ordinary plates to great advantage, especially in landscape photography.

2. Sensitometer Nos. 23 and 25 we think preferable.

3. They can be developed with any of the customary agents, but should be handled in a very much subdued ruby light.

4. The sensitiveness is very nearly alike, but towards or after sunrise and sunset, on account of yellow rays prevailing, the exposure may be reduced proportionately.

51 F. C.—Can citric acid be used to make a silver bath acid for making solar prints by development? I have heard it could, and would like your opinion on it.

51 *Answer.*—We do not advise to use any organic acid with the silver bath. But as you probably develop with pyrogallol, citric acid will form a very good restrainer in composition with it.

52 GILBERTVILLE, MASS.—1. Professor Ehrmann's toning solution. Can this be used over again, by adding more gold?

2. What is the cause of prints having the red-brown tint? When I toned with Professor Ehrmann's solution, which was sent from the Chautauqua School of Photography, the tone was a beautiful warm purple.

3. Has the temperature anything to do with color?

4. Should prints be washed thoroughly clear of free silver before placing in toning bath?

5. What is best to clean the tin-type after squeegeeing prints thereon?

52 *Answer.*—1. It can not. See the formula on page 40 of PHOTOGRAPHIC TIMES.

2. The prints being red-brown indicate insufficient toning, or as you had better success with the bath sent to you, perhaps yours was not correctly compounded.

3. Very much so. Cold retards all chemical action, but by heat it is accelerated.

4. Not with the combined toning and fixing bath.

5. Use soap and water, and see that no foreign substance adheres to the plate or the print before squeegeeing.

53 G. R. asks if there is such a lens as the Darlot portrait, and if so, at what price?

53 *Answer.*—We reply that the Darlot portrait lens comes in several sizes. That for quarter size plates is $8,75; for half size, $17.50; 6½ x 8½, $33.50.

CHAUTAUQUA SUPPLEMENT

TO THE

Photographic Times.

CONDUCTED BY PROFESSOR CHARLES EHRMANN.

MARCH, 1893.



MANY of the students recently admitted to the corresponding class have asked for a picture of their instructor. The portrait above is a good likeness of him. The photograph was made by Miss Juvia Johnson, of Meadeville, Pa., a student of the present local practising class. It shows the instructor at his desk in the winter headquarters of the School of Photography.

NOTICE TO STUDENTS.

The old amphitheatre, which for the last fifteen years has sheltered the great Chautauqua audiences is down, to make room for a new enlarged and much improved auditorium. The site, when the structure and seats were removed, looked not unlike the ruined theatre of Dionysius in Athens. The new building, which is already under roof, will be a great improvement in convenience, beauty, comfort, and capacity over its predecessor. It will seat twelve or fifteen hundred more people, there will be no supporting columns in the main, central auditorium to obstruct the view, the whole building will be handsomely finished and decorated. The roof, with its great pitch and corrugated iron shingles, will give a protection from the elements which the old flat roof never fully afforded.

By far the most important work, however, was the laying of four and one-half miles of sewers in all parts of the town. This work was finished be

fore Christmas and nearly two hundred connections have been made with cottages. The sewage will not enter the lake, but will be chemically treated in the meadows below Chautauqua, by means of elaborate disposal works similar to those in successful use in many English and a few American cities. This complete sanitary system will, it is felt, insure in the future a continuance of the excellent state of public health which has heretofore existed at Chautauqua. Residents regard this latest development as a most satisfactory sign of permanence and future growth and prosperity. There has been a great deal of grading, changing of the lines of avenues, levelling of lawns, and other work done since the Assembly of 1892 closed.

We are much pleased to learn of these important and much desired improvements and if we add to them the renovated buildings of the School of Photography, for which we have the promise of Secretary Duncan, we may fully expect to enjoy a pleasant and prosperous season on the Assembly grounds next summer.

The practising class will open on or about July 12th at the old headquarters, corner of Pratt and Centre Avenues, adjoining the Post-office.

Application for membership may be made at any time. Subjects of instruction for beginners, rudiments in photography, practice in studio and field. Advanced students will be instructed in the use of the modern developing agents, orthochromatic methods, lantern slides and the use of the optical lantern, kallitype and emulsion printing, photographic excursions of members of the school and invited guests.

Examination Papers Returned.

No. 575 rated at 100 per cent. Pictures sent: excellent.

No. 552 rated at 81½ per cent. Pictures sent: first-class.

No. 613 rated at 83 per cent. Pictures sent: average work.

No. 760 rated at 99 per cent. Pictures sent: excellent.

No. 694 rated at 92 per cent. Pictures not yet received.

No. 582 rated at 100 per cent. *cum laude.* Pictures received not above average.

No. 607 rated at 99 per cent. Pictures sent: very beautiful.

The Exchange Club.

Report of the President.

The February exchange, both in quantity and quality, will compare favorably with any of our past exchanges. Considering the disadvantages of the season, this speaks well for the enthusiasm, perseverance and skill of the members of the club. With the return of more favorable weather, and with the improvements that have been made in developers and plates within the last few months, it is not unreasonable to expect even better work in the future.

In looking over and comparing the present and previous exchanges, it is noticeable that the best average results have followed the use of orthochromatic plates, but they are subject to the drawback of requiring a little longer exposure. If orthochromatic, or if non-halation plates can be made to work as quickly as the ordinary rapid plates, and we think it can be done, it will do away with that *bête noire* of photographers, halation, and add immensely to the powers of the camera.

No. 557.—J. C. Carpenter, in "An April Day," gives us an instantaneous picture, that in artistic effect we have rarely seen equalled. The subject, a wild, secluded pond, partially surrounded by trees, in which a flock of geese, in the foreground, are swimming rapidly, as can be seen by the ripples in the water with which the reflections of the trees are broken, give an idea of motion that is often wanting in instantaneous pictures. Working with an open lens, there is generally a want of definition in either the foreground or distance, but in this case there is but little want of sharpness in any part. A thoroughly artistic picture.

No. 485.—A. Neal is represented by a remarkably fine picture of the "Red Rocks" of Colorado, that would make glad the heart of a geologist. Every vein and fissure clearly and sharply shown, full of detail in every part, yet without the flatness that often accompanies such pictures. The figures are very well posed and taken. Technically or artistically it would be difficult to suggest any improvement.

No. 207.—Mary S. Turner. "Shepherd Church, Cambridge, Mass. Washington Elm in front." A very sharp, clear and well-timed picture, artistically and technically excellent. A very difficult subject, as the spire of the church and the limbs of the leafless trees are brought out against a clear sky, a subject that is generally accompanied with decided halation, but in this case without the slightest trace of that defect.

No. 555.—W. S. Wood. "A Knob of Red Sandstone." A vigorous and striking picture of a mass of Colorado rocks, picturesque and suggesstive of the rugged character of that part of the country.

Taken under a strong light, the contrast in the shadowed parts is very great and does not show as much of the details as would have been shown with a little lighter printing.

No. 122.—G. W. Hart. Mr. Hart's contribution to the February exchange is a strong and very artistic picture of a quiet reach in the "River Stamford, Conn." The water is overhung by fine old trees that are clearly reflected on its surface in the foreground. The artistic taste shown in selecting the point of view and the most favorable light, is what we should expect from Mr. H. The only defect is caused by the halation that so often accompanies very strong contrasts.

No. 195.—Percy Wells. "Antiquity." The subject is well-illustrated in this interesting picture. The central figure, an old man dressed in old-fashioned clothes, the old chairs and unmistakably old and well-worn doorway, with a part of the old stone house, are all very suggestive of "ye olden time." The only fault is caused by an inclination of the camera that has slightly distorted the perspective.

No. 221.—Mrs. C. L. Pierce. "The Three Friends," a young man, a pony, and a dog, make an artistic and pleasing group, well posed and well taken. Although it does not interfere in the least with the fine effect of the picture, there is a lack of sharpness in the distance that does not generally follow the use of so small a stop.

No. 281.—R. H. Scadin. "A Florida Scene." In this picture Mr. Scadin has managed to give a very good idea of the characteristics of the semi-tropical foliage of Florida. The tall and graceful palms, festoons of Spanish moss hanging from the trees, and the long, bayonet-like leaves of the century-plant, tell at once of a southern climate; the glimpses we have of the water suggest the home of the alligator. A well-chosen subject and well carried out.

No. 152.—Ella E. White. "The Old Stone Tower, Newort, R. I.," interesting from its antiquity; well represented in this picture, although a little too intense to bring out all its finest details.

No. 495.—Lucy D. Baldwin. "A Comfortable Little Smoke"—judging from the appearance of a lunch basket and the smoke from a nearly extinct fire—is being enjoyed by a gentleman who has found a cosy place for a picnic in the woods; it is also a well-chosen spot for a picture. At first sight the smoke might be mistaken for a flare spot.

No. 35.—Ella S. Switzer, in "A Maiden Fair to See," has a remarkably fine picture that fully justifies the title. It is a full-length figure of a young lady, dressed in white, with short sleeves; every fold in the dress is shown without a trace of chalkiness; the face and arms beautifully round and clear, the posing of the figure perfect, and finely brought out by a dark, yet clear background, in which is shown vines and flowers. A picture that has seldom been equalled in our exchange.

No. 476.—M. F. G. Geisse. "Among the Colts," is a small but exquisite picture of a number of colts in a field; one of which is affectionately interviewing one of the two men who are with them. All parts of this little picture are uncommonly sharp for a snap shot.

No. 38.—Laura H. Mull. "At Sea," taken aboard the French steamer "La Champagne." A well-arranged group of nuns, in their quaint and peculiar costumes, accompanied by a priest. In the background the ship's boats, ventilators and other characteristics of an Atlantic steamer's deck, make a very interesting picture. It is not quite as sharp as could be desired, probably owing to the vibration caused by the engines.

No. 541.—Henry E. Canfield. "Grand Army Day at Chautauqua, 1892." This picture is presented as a souvenir of the old Chautauqua Amphitheatre, now replaced by a larger and finer building. An extremely difficult subject to make anything of, as many students have found out.

Henry E. Canfield.

Queries Answered.

No. 762.—1. My formula for amidol developer is

Water	50 parts
Sulphite soda	10 parts
Amidol	1 part

Dilute with from three to four parts of water. So reads your formula and directions for amidol developer, but I can not get other than thin negativls; no intensity; no clear lights; all are fogged.

2. Some say the sulphite must be neutral. Andresen does not speak of it. Tell me of a reliable formula.

3. I have used my old carbonate toning bath with Bradfisch aristo paper, added alum, which made it acid; neutralized again with alkali, and added more gold, but there was no toning action perceptible, and prints immersed did not go beyond a yellowish-red in three quarters of an hour. I want to know:

4. Has the gold been precipitated from the solution, and did the addition of alum do any good at all?

5. Is alum in the fixing bath as good as citric acid?

The pure hypo bath is of course, neutral, but alum makes it acid. Is that not so?

6. Can Bradfisch paper be toned well by any other method than their own?

7. Is the combined toning and fixing bath equally good for double albumenized paper.

8. How can I produce perfectly clear and transparent lantern slides with amidol or any other developing agent?

Answers.—1. Formula correct, but remember amidol requires an exposure much shorter than any other developing agent. Your negatives have apparently been very much over-exposed.

2. Absolute neutrality of the sulphite is not a necessity. Read the daily literature on the subject. Your formula is about as good as any that we know of.

3. What a mixture! we must exclaim.

4. You do not give the details of your operations. In the carbonate gold bath we must tone the prints after being washed. Adding alum is of no use, but is injurious, as it precipitates the gold out of the alkaline solution.

5. Alum in the fixing bath has an entirely different action. When mixed with hyposulphite sulphur, and hydrate oxyd of aluminum are thrown down, sulphurous acid is evolved, and absorbed by the water of the solution, which makes the solution acid. After filtering it can be used as a fixing agent, and is the basis of our own combined toning and fixing bath.

6. It can. Our own bath fixes and tones Bradfisch paper very well, and we think our prints to be permanent.

7. We prefer to tone and fix albumen prints in separate solutions. Use the borax bath, or that described in Lesson X.

8. In the first place, take a good plate like Carbutt's, a negative of average good quality is the second necessity, and if you expose properly, either by contact or in the camera, eikonogen, para amidophenol, or amidol in proper concentration will not fail. Do not spare bromide if the exposure is over, and fix in the acid hypo bath.

No. 752.—1. My Waterbury B lens has rotary stops marked *f*/15, *f*/20, *f*/25 and *f*/35. Their diameters are $\frac{5}{8}$, $\frac{1}{2}$, $\frac{3}{8}$ and $\frac{1}{4}$ inches respectively. Calculations from these figures would give focal length of lens at from $8\frac{3}{4}$ inches to 10 inches. On looking up catalogues I find a lens listed that I think is the same one in which focal length (or "back focus" which I take to mean same thing) is given at 10 inches. Calculations on this as per Article 114, page 292, "Annual" 1893, show my stops should be marked $\frac{5}{8}$ inch, *f*/16, $\frac{1}{2}$ inch *f*/20, $\frac{3}{8}$ inch *f*/26, $\frac{1}{4}$ inch *f*/40. Are my calculations wrong or does the focal length differ with different stops?

2. It is stated "the smaller the stops the longer the exposure inversely in proportion to the squares of their diameters." If with a certain subject the exposure with $\frac{3}{8}$ inch stop is 2 seconds, I figure that with same subject and $\frac{1}{2}$ inch stop the exposure should be 1.1 second, with $\frac{5}{8}$ inches .7 second, and with $\frac{1}{4}$ inch $4\frac{1}{2}$ seconds. Am I right?

Answer.—Your calculations are quite correct.

No. 475.—All my baths and solutions were frozen the other night. Are they ruined?

Answer.—Not if you thaw them gradually.

No. 573.—1. I do not get density or opacity in anything I do—and I am very particular as to measuring and weighing my developer—which is eiko cum hydro.

2. I must try some intensification to see if that will help me. My negatives are too thin I am certain.

3. Should aristo paper be toned with ammonia?

Answer.—1. The cause of your feeble negatives is in the first place over-exposure. To restrain development add from 2 to 3 drops of a 10 per cent. solution of bromide of potassium to each ounce of developer, or what would please you perhaps still better is citrate of sodium, which promotes intensity very much.

2. Let intensification be a "dernier resort"; be careful not to fall into bad eabits, but if you must intensify use the method described in Lesson VIII.

3. Aristo paper need not to be fumed in ammonia.

PICTURES RECEIVED.

No. 760, of the Advanced Class.—Three $6\frac{1}{2}$ x $8\frac{1}{2}$ of "Schoolroom and Kindergarten," taken by magnesium flashlight. Most excellent photograph. Of the same quality are snow and ice scenes, and general landscapes. We are much pleased to see how successful this diligent scholar is in photography.

No. 693, of the Advaced Class.—Several very fine landscapes and interiors, printed on mat-surface paper, prepared according to Formula 1, Lesson X. The tones are brilliantly black, and whites perfectly transparent. "The Gentleman," a full-length picture of a negro boy, is rather an indifferent blue print of a good negative. Blue prints ought to be made upon a more solid paper.

No. 762, of the Advanced Class.—Reproduction. An enlarged portrait. Excellent.

Many "Pictures Received" must stand over till April.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W I. LINCOLN ADAMS, Editor.

SUBSCRIPTION RATES.

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Subscriptions to THE PHOTOGRAPHIC TIMES received by all dealers in photographic materials in this and foreign countries, also by the American News Co. and all its branches.

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One page, each insertion $25 00
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Quarter page, per insertion 8 00
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Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street. New York.

Commercial Intelligence.

SOLD OUT! SOLD OUT!

THE publishers of "The American Annual of Photography and Photographic Times Almanac" for 1893, beg to announce that the entire edition consisting of over 18,000 copies has been exhausted, and that they are unable to fill further trade orders.

They offer to announce in these columns without charge, the name and address of any dealer who may still have a few copies for sale. They request that such dealers will kindly notify them at once, as they are constantly receiving requests for the "Annuals" which they cannot fill and they wish so far as possible to facilitate the means by which every one who desires a copy of the book may obtain it.

WHERE YOU CAN OBTAIN THE AMERICAN ANNUAL FOR 1893.

T. R. Crump, of Louisville, Ky., reports ten copies unsold.

Griffen & Bolwell, of Scranton, Pa., have a few copies yet unsold.

A. M. Knowlson, Troy N. Y., reports a number of copies of "The American Annual" for 1893 still on hand.

Lenox Photo Supply Co. report a few copies of the Times Annuals still on hand.

C. R. Savage, of Salt Lake City, Utah, reports 20 copies of the '93 Annual yet on hand.

Frank N. Blake, of North Adams, Mass., announces that he has ten (10) copies in paper covers still unsold.

W. D. Gatchell, agent, photographic materials, at 343 W. Jefferson St., Louisville, Ky., reports a small number of The American Annuals for 1893 still in stock.

R. M. Davis, 1728 Arapahoe St., Denver, Colo., has some copies of "The American Annual of Photography and Photographic Times Almanac for 1893" still on hand, all in paper covers.

Vallentine & Dickerson, 637 Broad St., Newark, N. J., report that they have seven copies remaining of "The American Annual of Photography and Photographic Times Almanac for 1893."

The Geneva Optical Company, 67 Washington St., Chicago, writes that "a few copies still remain unsold on our shelves. * * * There is but one opinion expressed as to the book itself—'Unequalled and indispensible.'"

E. J. Horsman, 341 Broadway, reports eleven copies in paper covers.

Geo. J. Wolf & Co., 918 Arch St., Philadelphia, report some unsold copies in paper covers.

Butts & Adams.—"The modern and progressive" photographic stock house at 457 and 459 Washington Street, Buffalo, N. Y., report that they have a few of the '93 Annuals for sale, both in paper and cloth.

Messrs. E. M. Newcomb & Co., dealers in photographic apparatus and supplies, at 69 West 36th Street, New York City, write in regard to "The Annual" as follows:

"We have copies of '88, '90, '91, '92 and '93 Annuals, paper and cloth, and will sell them at the list price until exhausted. We have one copy of the Edition de Luxe, 1889, at $25.

THE SCOVILL & ADAMS CO.

Gentlemen:—Replying to your inquiry relative to "Times Annuals" for 1893, we would say that out of the large supply (twice replenished) that we got of you, we have only four (cloth bound) remaining.

THE OBRIG CAMERA CO.

"SUPERIOR TO THE ORIGINAL."

* * * * * To judge of what I have seen of Wuestner's American "Imperial" non-halation plates they seem to be superior to the original Sandell plates manufactured in London. * * * * *

Charles Scolik,
Vienna, Austria.

The Photographic Times with its fifty-two artistic frontispieces, and its wealth of practical information by the leading experts in two hemispheres, is certainly worthy of preservation in a permanent form. It makes a standard book of reference good for all times, and is being thus generally regarded by the leading photographers. Some late pictures deserving of special mention are the pictures of "Sheep" in the number for January 20th and the "Portrait of a Lady" in that for January 27th, the latter being effective for its graceful pose and lighting.

Some are endowed with good temper to a greater degree than others. The gift can, however, be increased by the effort to cultivate it.—*Woman's Illustrated World.*

TRY DR. ANDRESEN'S AMIDO DEVELOPER.

Business Notices.

WANTED.—A copy of THE PHOTOGRAPHIC TIMES, of February 19, 1892. Address J. M., care THE PHOTOGRAPHIC TIMES.

FOR SALE.—I am compelled to sell my photo gallery at a bargain, for I am sick with paralysis. Make offer.
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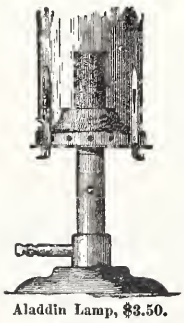
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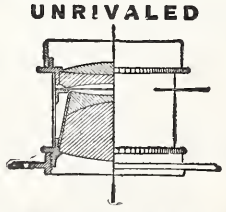
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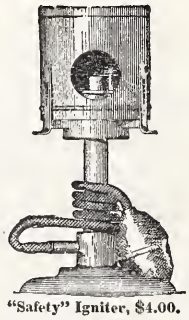
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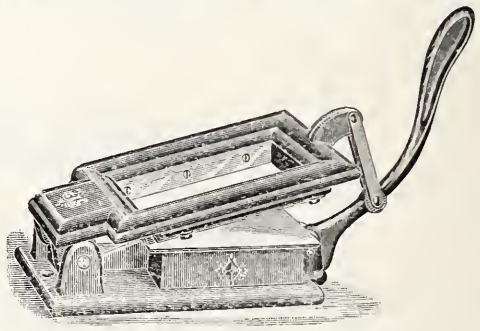
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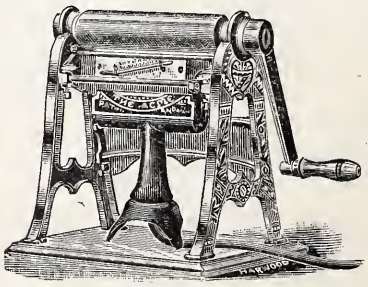
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It is simple in construction and will not get out of order.

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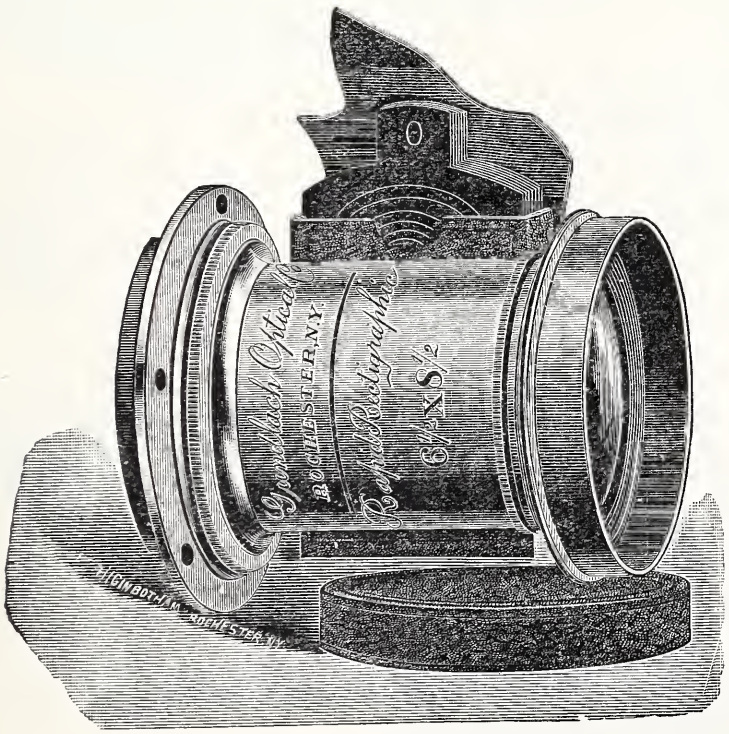
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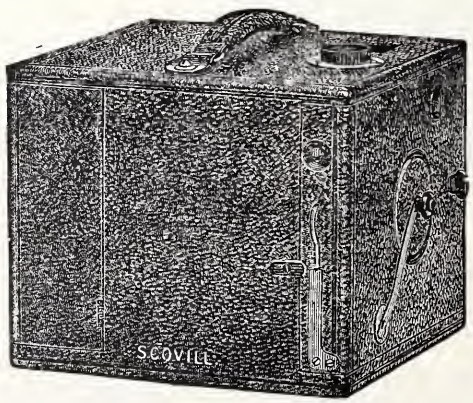
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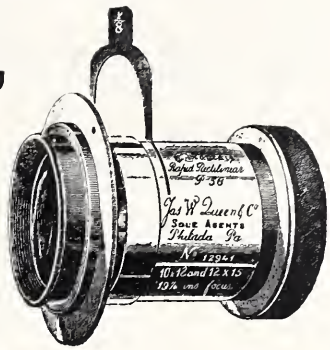
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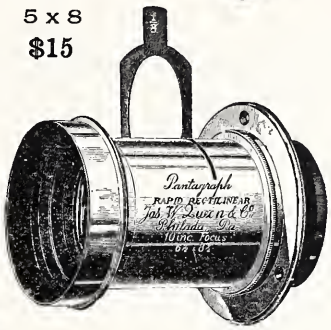
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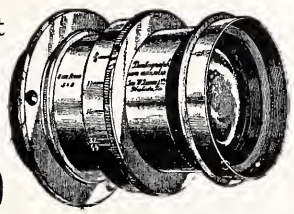
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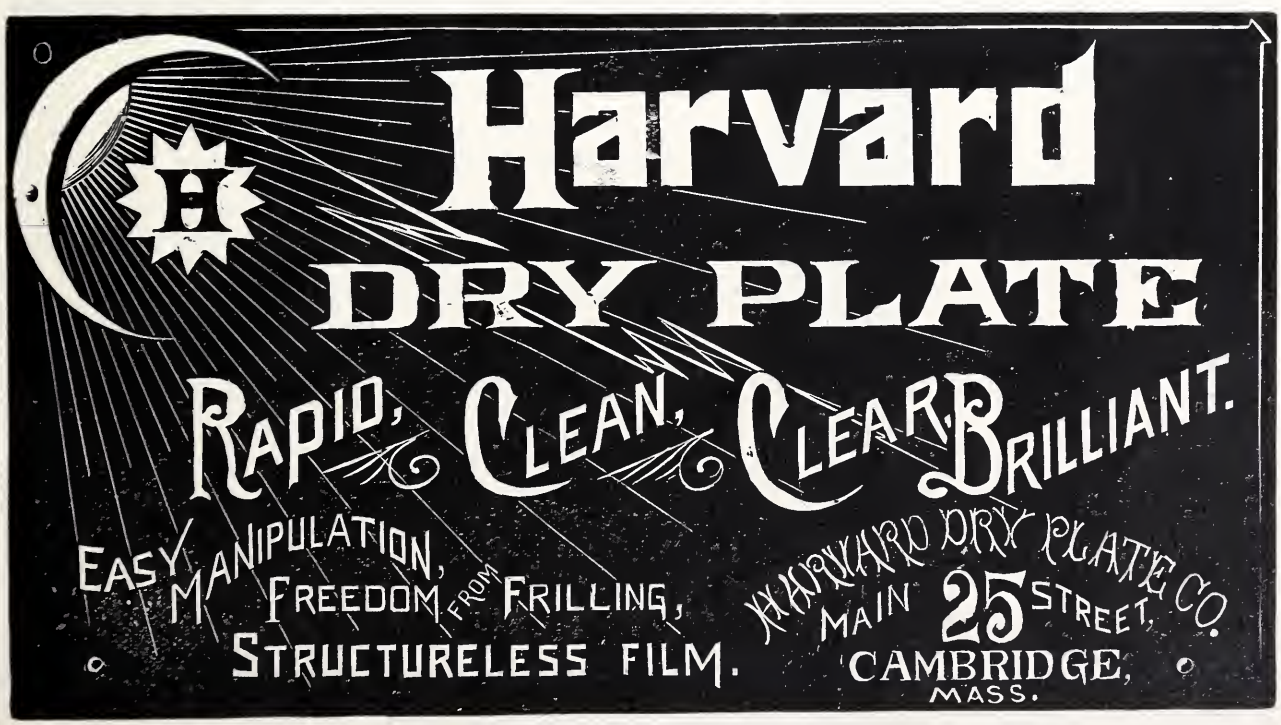
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Gelatine Paper will not crack, blister, or peel, hence is the coming paper.

At any time previous to May 1, 1893, we will mail a sample dozen of trimmed Cabinets to any photographer who will send us his card and 4 cents in stamps.

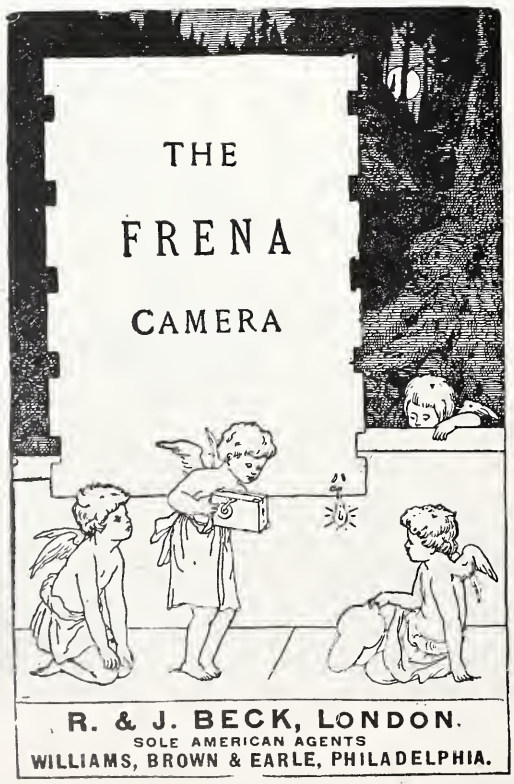
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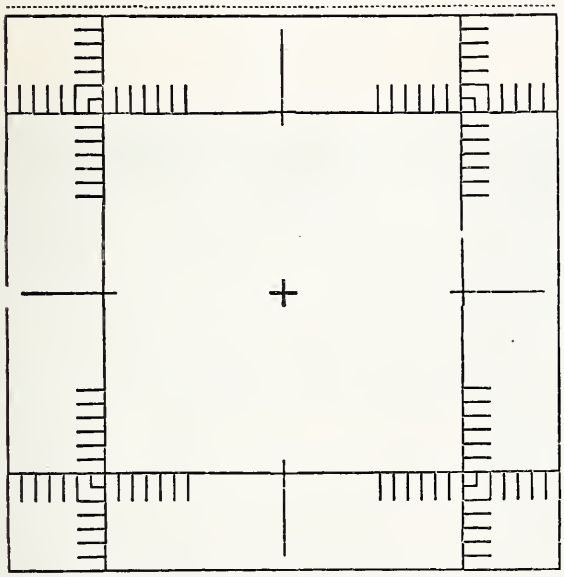
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Subject.....



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Made by .....

The "Boston Mat" was designed by Wm. G. Reed, of the Boston Camera Club, for the purpose of simplifying the task of mounting slides, having the openings all *harmonious*, if not uniform, and to enable the maker to so prepare a set that all will "register" when projected.

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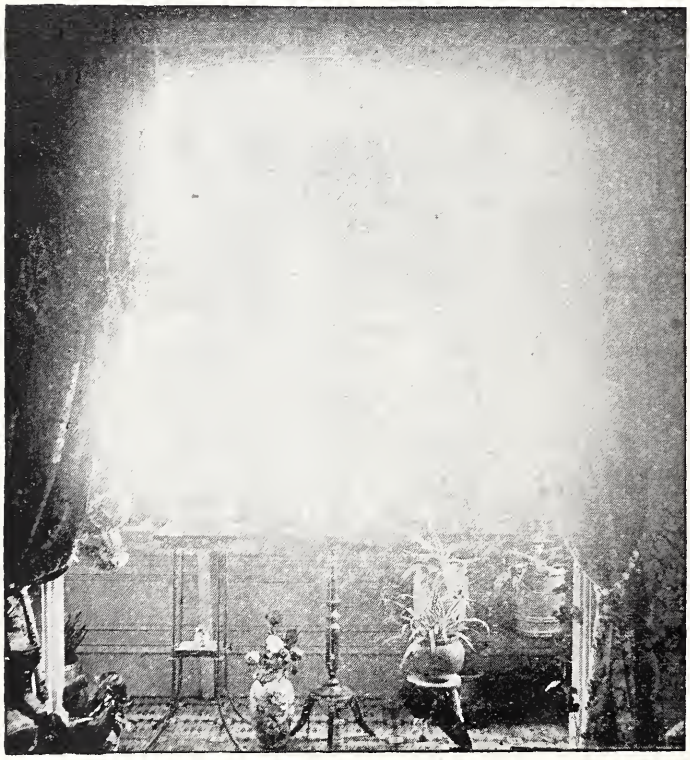
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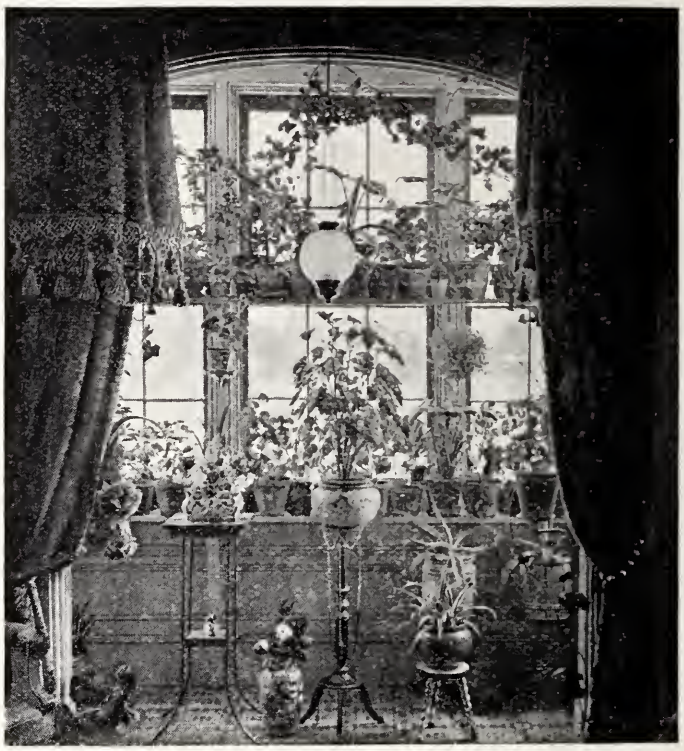
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THIS PICTURE and ON THIS!



Reproduced from Negative on ordinary Plate.



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Both Negatives Exposed on the same Subject, one immediately after the other.

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2	14 x 17	11 25
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IT HAS NO EQUAL.

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A MAT-SURFACE PAPER, having no gelatine used whatever. Prints in the sun until the deep shadows appear; then is developed, washed and fixed. The prints have much the same appearance of platinum, and the tone can be regulated from a brown to black.

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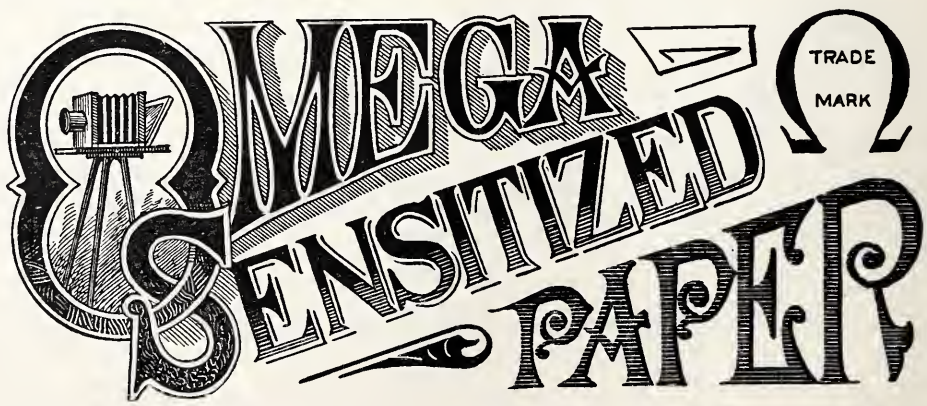
Parties trying "Vici" will be favorably surprised, as it is something entirely new, and should not be likened to the mat papers at present on the market.

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Very respectfully,
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BY J. A. BARHYDT.

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A Cartridge yields from 10 to 16 ounces of developer, according to strength.

The S. P. C. Amido (Andresen's) developing solution, with full directions, ready for use, in eight (8) ounce bottles, - - - - - - 50 cents.

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A Practical Guide for the Beginner.

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THE PHOTOGRAPHIC TIMES.

VOL. XXIII. APRIL 7, 1893. NO. 603.

GEORGE INNESS, N. A.

"Let us believe in art not as something to gratify curiosity or suit commercial ends, but as something to be loved and cherished, because it is the handmaid of the spiritual life of the age."—GEORGE INNESS.

AT the age of sixty-eight, George Inness is the most prolific and eminent landscape painter of his time. This is the almost unanimous verdict of artists, critics, connoisseurs and collectors alike. During an active and unceasing art career covering over half a century in many climes and countries he has painted thousands of canvasses now found in public and private galleries in all quarters of the world. And yet, strange as it may seem, there cannot be found in this vast number of works two pictures duplicating precisely the same method, although all, it is safe to say, bear the individual impress of the genius of George Inness; and singular enough, although hundreds of artists of high rank have tried, none has succeeded in producing an imitation so close that the deception would not be apparent on a brief examination. Thus there may be quoted as illustrating this fact a solid bit of wisdom uttered by Mr. Inness himself in his usually terse and comprehensive speech. He says:

"The master should exercise his control over the pupil by restraining the latter's tendency to imitation, and by leading him to the perception of those principles through which facts are represented according to their relative significance."

Again, as this painter has achieved great fame for clear and brilliant epigrams not only on art, but on many intellectual themes, it is well to recall these words:

"What few painters have to learn is to keep the shop closed in the presence of nature—to see and not think we see. When we do this our eyes are lighted from within and the face of nature is transformed, and we teach the world to see reality in a new light—such is the mission of art."

These words of the painter may give some idea to the layman why Mr. Inness has reached the pinnacle on which he now stands, and like a truly great man he is constantly reaching out *for higher* flights. He is never satisfied. He is always after the Beyond. He feels that there is a mystery in landscape always on the verge of revelation to his brain, but always just eluding his eager grasp. It is not too much to assert that Mr. Inness has been the greatest experimenter in modern art, whether in this country or in Europe, and he has never conducted his work with any view to pecuniary gain—although in his later years it has come in a rich abundance. It has been, moreover, a mistake to suppose that he confined his painting strictly to the delineation of landscape. In fact, he has exhibited a versatility unexampled in a career covering so many years. No branch of painting has he left untouched, portraiture, figure subjects, marines, quiet pastorals, or what not. Mr. Inness likewise is a poet, not only in the ordinary phraseology in metre, but as between idealism or literalism in art he is the high priest of the former. In a critical notice of the painter published some years ago, and even before, perhaps, he had reached his present lofty place in the profession, the present writer said: "He has never borne the trade-mark of a Master. To one, certain of his qualities may suggest Corot; to another his atmospheric effects may recall Turner; a third may see Constable in his cloud-swept skies, or hint at Ruysdael; while others may consider the strongest external influence derived from Rousseau."

None but a man of positive individuality can enter so boldly into a spiritual conflict over the problems of art and nature. The vehement yet subtle nature of George Inness has all to do with his pre-eminence to-day. A slave of no fleeting fad in art, like that fathered by Holman Hunt, or another springing up like a threatening flood the confines of which he was yet able to put a precise value on—

Impressionism on the one hand and Pre-Raphaelitism on the other.

When it is considered that Mr. Inness is wholly self-educated; that in his early youth he was physically infirm; that during his whole life he has been without any art master save his own dominating self, the length and breadth of his genius will be the better appreciated. Furthermore, he is a many-sided man, deeply interested in doctrinal and economic questions, an alert, brilliant and earnest declaimer and conversationalist; a wonderful, graphic and correct writer and speaker of the English language,—and added to all these accomplishments he is the possessor of a quaint humor, an absolute independence of all pecuniary bondage, and a profound contempt for the shams and shoddies of the period in which we live.

The plate of his studio at Montclair, New Jersey, is from a photograph by Mr. E. S. Bennett, the genial amateur, of 317 West 50th Street, New York, who has taken many art interiors for pictorial publication.

HARMLESS VS. DANGEROUS MAGNESIUM COMPOUNDS.

Not long ago the New York daily papers reported a heart-rending accident, consequent upon the explosion of magnesium flashlight powder in the hands of a careless operator. Our German cotemporaries of recent date relate two similar, if not more lamentable occurrences.

In the first case a can containing a large amount of the explosive powder was placed near a heated stove and exploded, tearing into fragments the right hand and arm of the operator, and injuring him otherwise, beside setting the house on fire. The other accident occurred at a masked ball, when several groups were to be photographed by artificial light. Without known cause the bottle containing the powder exploded, burned the whole body of the operator in a dreadful manner, destroyed his eyesight, and, according to last reports, will probably result in his death.

We and every reader of these pages deplore these frightful accidents to the fullest extent; but so long as our photographic chemists and manufacturers will insist upon placing such dangerous compounds in the hands of careless and frequently ignorant people, as those containing chlorates and perchlorates, antimonium sulphide or ammonium picrate, we may expect to hear every now and then of some poor photographer who has been killed or maimed for life.

Is there really a necessity to be subjected to these accidents, and are we absolutely dependent on flash-light powders which are self-explosive? We answer most emphatically, No! There are perfectly harmless flash-light powders at the command of all. The "Scovill" flash-light compound, for instance, whether dispensed in bulk or in the form of graduated cartridges, and of which hundreds of pounds have been consumed during the last few years, is perfectly harmless and not one accident with it has yet been reported. This substance does not explode by friction, by pressure, or by concussion, it contains no poisonous substance, as has been shown publicly and after which one of our esteemed contributors was pleased to name it "Scovill Palatable Magnesium Compound."

But what is more, and perhaps the most important to the practical photographer, is that in a list of magnesium flash light powders published by the renowned Dr. Eder after the *Scovill* powder had been introduced, a compound almost identical in quantity, and perfectly so in the substance is assigned the first place in regard to luminosity and activity.

Some people have found fault with the Scovill powder because of the smoke it produces, but trade records and figures show them to be in a very insignificant minority. Why use dangerous compounds be used when equal if not superior results can be obtained by using those which have been proven perfectly harmless in every way?

GEORGE WASHINGTON WILSON.

One by one, and in an increasingly rapid sequence, the men who made photography are passing away.

There is no one whose name has ever been associated with all that is excellent in the art department of photography that stands so high as that of George Washington Wilson, of Aberdeen. When he first issued his singularly beautiful stereoscopic views, it was at once universally felt that a real artist had arisen, one who would aid in elevating landscape photography from the somewhat low state of mediocrity in which it existed. In his pictures were concentrated the highest development of artistic beauty and technical skill, and they became models for imitation; and it is to this, in many cases slavish, imitation that we owe a marked and rapid progress as soon as his gems of art came to be known and studied. "Quite Wilsonian" was and still is, a term frequently applied to photographs having a certain style of *technique*. Imita-

tion is rightly said to be the sincerest form of flattery, and we know of some who did not disdain to follow Mr. Wilson's footsteps in such a literal fashion as, having one of his views in hand, and observing the relation of one portion of the scenery to the other, to eventually by this means discover the identical spot where his camera had been planted, and there also plant their own tripods.

In early life Mr. Wilson studied in the Art School, Edinburgh, and for some years he followed the profession of miniature painting, an avocation in which he attained a considerable measure of success. His reason for abandoning that art is rather remarkable. We learn from a local paper that just as he had begun to make a name for himself photography was discovered, and the impression became common that portrait painting as a profession was doomed. Mr. Wilson was apparently of that opinion, and threw aside palette and easel for the camera. He became one of the pioneers in photography, and was among the first to apply it to landscape. It is said that he had the honor of taking the first photograph of the Queen and the Prince Consort at Balmoral in 1850. His services were frequently requisitioned at Balmoral after that; and one notable group of Royal personages includes the late Emperor Frederick (then the Crown Prince of Prussia) at the time he was courting the Princess Royal, and so gratified was the Prince with the character of the work produced by Mr. Wilson that he commissioned him to execute a series of water-color sketches representative of seaside scenery for presentation to the Princess Royal.

He was seventy years of age when the sad event occurred. When he retired to bed the previous evening he was in his usual health, but at one o'clock in the morning he had an epileptic seizure and expired soon afterwards.

After his retirement from active business, he once more took up the brush, and painted the portraits of several citizens of eminence. Mr. Wilson was a member of the Chamber of Commerce, and had represented one of the wards of the city in the Town Council. He was also a director of several companies in Aberdeen.

It is needless to speak in terms of eulogy of his works—that has been done by the world during a long term of years; and through them, although now dead, he yet speaketh. As we have said, he was seventy years of age at his death, which took place on March 9th. He is survived by a widow, four daughters and five sons, to all of whom we tender our sympathy.—*British Journal of Photography.*

NOTES ON NEW DRY PLATE DEVELOPERS.

[From advance sheets of the Journal of the Photographic Society of India, sent "with the compliments of the Author."

I.—Glycin.

In the April number of the *Journal* for last year I noticed one of the new developers brought out by Hauff, of Fuerbach, called *Glycin;* and as I have lately received some of it, an account of its behavior under trial may be of interest, especially as it appears to have many valuable points in its favor as a good and very reliable developer.

Glycin appears to be identical with *p.* oxy-phenyl-glycocoll, or para-oxy-phenyl-amido-acetic acid, with the formula—

$$C_6H_4 \begin{cases} OH \\ NH, CH_2, COOH, \end{cases}$$

and is prepared, according to Vater, by the action of chloro-acetic acid upon para-amidophenol. It is therefore a chloro-acetate of para-amidophenol.

The sample I have is a light cream-colored granular powder, not altering readily in the air. It is not very soluble in water or in alcohol, but dissolves easily by the addition of caustic alkalies or their carbonates. The watery solution has a strongly acid reaction, but it is quite colorless. Alkaline solutions take a yellow tint which disappears on the addition of sodium sulphite.

It is easily soluble in dilute nitric, sulphuric and hydrochloric acids, the solutions being quite clear and colorless. It is not so readily soluble in weak bromine water, but the solution becomes colorless. Nitrate of silver first turns the glycin solution a turbid, dirty greenish-black; but it afterwards takes a violet tint, like slightly darkened chloride, and silver is precipitated, but not in the bright metallic form distinctive of metol. The same change takes place if the glycin solution be acidified with nitric acid before the addition of the silver salt, the silver precipitates and leaves a clear solution of a beautiful color. With a solution of glycin made alkaline with potash, nitrate of silver gave at once a thick brownish precipitate.

The manufacturer recommends two solutions for developing, according as the negatives are required to be soft and detailed or hard and dense, and glycin is said to be especially suitable for reproductions of all kinds, photomicrography, &c. The formula for the first developer is:

I.

a	Glycin	4 parts
	Potash	1.5 parts
	Sodium sulphite (crystals)	12 parts
	Water	100 parts
b	Potash	10 parts
	Water	100 parts

For use one part of *a* is mixed with two parts *b*.

Heat is required to dissolve solution *a*; but I find that on standing the salts have crystallized out in very pretty thin, long hexagonal plates.

The second developer for dense negatives is as follows:

II.

Glycin	5 parts
Potash	25 parts
Sodium sulphite (crystals)	25 parts
Water	100 parts

diluted for use with three parts of water.

In preparing this it is well to first dissolve the potash in the water, then the glycin, and add the sulphite. The solution is nearly colorless or a dirty white, and does not readily change by keeping, either in color or in its developing power. I have not yet ascertained its full keeping powers.

Both of these formulas give powerful and effective developers, yielding images of great density and brilliance, with clear shadows and perfect freedom from stain. Like other para-amidophenol developers they require good exposure, and the density depends a good deal upon the length of time the plate is left in the solution, as is also the case with ferrous oxalate and the sulpho-pyrogallol developers. The action of glycin is slow compared with amidol and metol, but not inconveniently so, and there is not the same tendency to a general veiling over the image.

I find both developers quite suitable for ordinary landscape work, the first formula being perhaps the better, while for copying the second is more suitable. They also work very well with orthochromatic plates. I have not yet tried them for instantaneous work, but with a suitable very rapid plate and a large aperture of a quick-acting lens they would probably answer. Several plates can be developed in a batch of developer without any marked change in it. The stability of the glycin, both dry and in solution, the density and clearness with which it works and the latitude that appears to be permissible in exposure, seem likely to give it a very great advantage over para-amidophenol, hydrochlorate, and other new developers lately introduced. Largely diluted it would probably be an excellent developer for lantern-slides or for bromide paper.

A voltametric examination of the developer, made up according to formula II., shows that it evolves hydrogen more vigorously than any other developer I have yet tried, and this would appear to favor the hypothesis that developing power is dependent, other conditions being suitable, on capacity for evolving hydrogen.

The dilute solution made up in the above proportions contained—

Glycin	1.25 parts
Potash (anhydrous carbonate)	6.25 parts
Sodium sulphite (crystals)	6.25 parts
Water	100.00 parts

This solution was first electrolyzed in the tube voltameter described in a previous paper, with platinum electrodes, using as before a battery of 4 gravity cells, the current being 280 milliampères with a pressure of 4.2 volts, the resistance of the galvanometer being 1 ohm. The current through the voltameter at starting was 80 milliampères with a pressure of 3.2 volts, and in twenty minutes it had decreased to about 75 milliampères and 3.15 volts. At starting the solution in the tubes and the outer vessel was quite clear and colorless—the temperature about 72.5 deg. F. When the current was turned on, the evolution of hydrogen was very brisk, and the yield was—in five minutes 2.5 c.c; in ten minutes 5.4 c.c., and in fifteen minutes 7.6 c.c.

This corresponds very closely with the results obtained from an ordinary ferrous oxalate developer containing 4 drops of 10 per cent. solution of potassium bromide to 120 c.c., or about 1 drop to the ounce. In this case 5 c.c. of hydrogen were evolved in ten minutes, the current with the same 4-cell battery and voltameter being about 75 milliampères with a pressure of 3.25 volts.

The solution in the oxygen tube turned a bright yellow, and the anode was surrounded by a dense layer of yellow solution. The general body of the solution in the outer vessel did not change color, nor did that in the hydrogen tube. At the end, when the oxygen tube was removed and the solution in it mixed with the remainder, the whole was a bright yellow with a slight blue fluorescence.

With silver electrodes, the evolution of hydrogen was not so brisk, possibly owing to the immediate formation of a film of oxide on the anode.

With the same battery the current through the voltameter at starting was about 80 milliampères with a pressure of 2.7 volts, and in 20 minutes it decresed to 75 milliampères with 2.5 volts. The yield of hydrogen was—in 5 minutes 2.2 c.c.; in 10 minutes 4.5 c.c.; and in 20 minutes 9.3 c.c. The anode was covered with a flaky deposit of silver oxide (?), and ribbon-like streams of a turbid yellowish solution were given off above and below the anode plate. As in the case of the platinum electrodes, the color of the solution in the outer vessel was not much changed; and when the solutions were mixed at the end the mixture was slightly turbid and not such a bright yellow, but it was also fluorescent.

Dr Eder, who reports on glycin in the *Photo-*

graphsche Correspondenz for October, 1892, speaks highly of it, and gives a formula for a glycin-soda developer as follows :

Glycin	3 parts
Sodium sulphite	15 parts
Crystallized soda	22 parts
Water	200 parts

The solution can be used at once and keeps unchanged for a long time in closed bottles. It gives clear and soft negatives; and by lessening the quantity of soda or diluting the solution the negatives will be more transparent. By adding bromide of potassium even decided over-exposure can be remedied.

Baron von Hübl has found glycin a very valuable developer for collodion-emulsion plates when made up according to formula I., diminishing the water to 80 if greater intensity is required, or mixing one part of solution A with three to five parts of B, or diluting the normal developer, if less density is required. He says that this developer gives with collodion-emulsion plates perfectly clear shadows, a good and very compact deposit, rich half tones and a surprisingly beautiful gradation. This agrees with my own experience of para-amidophenol hydrochlorate as a developer for collodio-bromide emulsion plates.

II.—Amidol.

I have lately received a fresh sample of amidol which differs in a very marked degree from that I received first. It is more stable and its solution does not discolor so quickly; but it does not seem to be quite so good a developer in some respects, there being more difficulty in getting density with it. The issue of these different qualities of amidol no doubt accounts for the varied opinions on its merits given by different workers.

III.—Metol.

I have not worked further with metol since my last paper on it. I have, however, noticed one fact regarding it which may be worth recording, and that is that old metol solutions can easily be recognized by the strong smell of phosphorus they evolve. I observed this smell in testing it with various re-agents, Metol is said to be the sulphate of mono-methy-para-amido-meta-kresol, but is possibly a phosphatel or phosphite of this compound. The smell of phosphorus is most decided and unmistakable.

IV.—Guaiacol, Phlorol and Cresols.

Since my last note, in the January number, was written I have tried two fresh samples of guaiacol, one of them purified from potash and the other an ordinary sample of English origin, obtained locally, which seems to be very pure, judging from its freedom from color when mixed with potash and the slowness with which it develops. Both these samples have, however, undoubted developing powers, and it seems difficult to obtain a sample of perfect purity and without any developing power,unless one prepares it for one's self, as Messrs. Lumière have done. It is an operation requiring more care and time than I can give it at present.

I have also tried some other derivatives of creosote, among them cresol, para-cresol and phlorol, and find that mixed with potash they are all capable of developing an image on a dry plate, though not practical developers. Phlorol seems the most active, but cresol develops without difficulty, while para-cresol only gave a very weak image in two days. The solution of the latter in caustic potash has a strong orange color which deepens by exposure to the air. It remains to be seen if this strongly colored solution may be turned to useful account in conjunction with other developers. In this case also it is probable that the developing power may be due to impurities or oxidation-products formed during the progress of development.

As it seemed possible that the impurity which confers on these phenols the property of developing might be pyro-catechin or some homologous substance, an experiment was tried to ascertain how small a quantity would suffice to bring out an image. It was found that a solution of $\frac{1}{50000}$ of pyro-catechin in a 1 per cent. solution of caustic potash (or about 1 grain of pyro-catechin in 5 pints of a 5-grain solution of potash) was sufficient to develop a distinct but very weak image. It is possible that even a smaller quantity would suffice, and under these circumstances it may readily be understood how enormously difficult it is to obtain these complex derivatives of wood-tar and creosote absolutely pure and free from substances which may have developing power.

J. Waterhouse.

ON DIVERS SUBJECTS.

(Mr. W. J. Stillman contributes the following instructive article to the *British Journal of Photography*, March 17.)

The Panoram.

I suppose that no less than a hundred or so inventors have exclaimed, on reading the account in the last *British Journal of Photography* of the "Panoram," "Why, I have had that in my head ever so long." I am one of the hundred or so,

and congratulate the practical inventor for carrying out an idea which occurred to me the first time I used the Eastman roll-holder, having in my possession an old Johnson Pantascopic camera, which, in the days when I had time to use it, gave me great satisfaction. Of course, it brings up the question of perspective again, and will make discussion hot. It will be impossible to make the general public accept the perspective of the "Panoram" as correct, for the presentation of a line known to be straight as a curved one will be at once denounced as a falsehood; but the fact is that, in the case of horizontal lines, only that one which is on a level with the eye appears to it as a straight line, the lines above that level being bent down at the extremities, and those below it bent up; and in their finest temples the Greeks, who had no idea of scientific perspective, recognized this phenomenon, and to give the buildings greater apparent dimensions, exaggerated the perspective effect by making the horizontal lines curve slightly, in the same sense that the effect of perspective made them seem to curve. The reason of it is apparent. If you stand opposite the central column of a long colonnade, the apparent height of the more distant columns diminishes in an increasing ratio, and, if the most distant were twice as far away as the central one, it would appear half the height; and this is the true perspective, as it is the true aspect of any natural object. Scientific perspective is a pure fiction, and the action of rectilinear lenses is so arranged as to confirm this fiction. It renders perfectly the facts on any given plane, but in no case gives the actual appearance to the human eye. As the editor has shown, a sphere in extreme perspective becomes an ovoid, while the capital of a column is, in the case of a very wide-angle view, distorted most unnaturally, while to the eye, looking directly at them, they are of the same shape as the central ones.

Perspective.

In talking of the relation of perspective to photography, whether the scientific or real perspective is to be treated of, we must remember that there is a complication not only easily adjusted in the equation, which is the fact that the photograph itself has to be seen in perspective, no matter how near it is held to the eye. Suppose, for instance, a photograph taken with a rectilinear lens of 15-inch focus of a façade of a building presenting a line of columns, the point of view being opposite the centre of the façade. By measurement the extreme columns will be of the same height as the central one; but, look at it from what distance we may, the photographed column which is most distant from the eye will be shorter than one in the centre, always on condition that we hold the photograph so that the eye is opposite the centre of the façade. If it be held at the distance of 15 inches from the eye, the distant column in the photograph will be just as much smaller than the central one as it would be in the building itself, and the horizontal lines will have the same curvature that they have in nature. But in practice we cannot look at photographs from the distance of the focal length of the lens, and it is only comfortable to look at them from a much greater, so that in those taken with short-focus lenses we are always seeing them falsely. But the eye is educated to these compensations, and we accept what we know to be the fact even when it is not in accordance with the true optical impression. It is as in many more serious matters, we accept recognized illusions as conveying a better idea of the truth than the absolute reality would give. Everybody knows the old story of Queen Elizabeth objecting to the shadows in her portrait, as representing her with dirty patches on her face which she knew not to exist there; but, when we look at a portrait in which the light and shade are ever so strong, we do not take exception to the actual color being different on one side of the face from that on the other, for without this difference the greater truth of the rotundity of the head could not be expressed. The simple fact is, and it can be easily proved, that any photograph can be shown in one way true and in another untrue. Taking one thing with another, I am inclined to think that the perspective which comes nearest to the truth in general is that of the panoram or pantascopic camera, for it agrees best with the method by which the eye takes in its vision.

Film Photography.

I have been seeing and hearing a good deal lately about the flexible film, as used in the roll-holder, and have seen the results of many exposures, with some results which make me doubt if it is possible to teach certain people to take a photograph even on the "pull-the-string, press-the-button" principle. I have known an amateur, in spite of all warning, to make a snap-shot at an old picture in a church, and, on being remonstrated with, to reply, "Why, I thought you had got the taking of photographs down to instantaneous!" Last winter, when the light was at its very lowest, and an instantaneous picture could only be hoped for in the mid-day hours of a bright day, and with a powerful lens at that, a roll of film exposures was

brought to the club for development, some of which were interiors, some late afternoon and over-cast day exposures, all being snap-shots, and on opening the camera I found that the smallest aperture had been used throughout. And a literary friend, whom I had fitted out with a roll-holder camera and minute instructions, came back with a roll of exposures running over six months, all taken with a medium stop, and at the same focal distance, some interiors and some sunsets! It is not uncommon even to get a time exposure with the camera held in the hand entirely unsupported by any fixed support. I once gave instructions to and outfitted an amateur who was anxious to take photographs of a picnic party, and brought back his exposures to me for development. The first plate showed three bands of unequal density across its length; puzzled, I threw it away, and tried the second. Same result. An idea flashed on me; I said, "Did you not put your camera in a boat out on the river?" "Yes," said he, "was not that right?" And he had given a time exposure with a small stop. My experience with Kodak-users is that not half have learned, perhaps are incapable of learning, the conditions under which the Kodak must be used. I never attempt an exposure without a bright sunshine, and then, in the winter, only in the middle of the day, say, from ten to two, and in summer only when the sun is at least two to three hours above the horizon. In my experience of wandering Kodakers I am convinced that at least one-half the films are wasted through insufficient exposure and utter inattention to the conditions necessary for success. Many negatives are spoiled by carelessness in development, and generally in the following ways:—First, the negative is not thoroughly and equally wetted before applying the developer, and develops unequally. Second, the operator tries to develop half a dozen negatives at once, and they either stick together in the bath or protrude from it, and show similar inequalities. Third, they are thrown carelessly into the hypo and hold bubbles under them, or lie partly out of the solution, in both which cases they show brown patches when finished, printing more intensely. A certain amount of shrewdness is imperative even for those who only pull the string and push the button, for a judgment of the nature and intensity of the light precedes success even with the Kodak.

The Sandell Plates.

I have seen some of the results of the use of the Sandell plates on our Roman church interiors, and I must say that I have never seen such negatives of any interior by any other process; but the question which puts itself to me is, whether the absence of halation is due to the use of emulsions of various degrees of rapidity, or simply to the thickness of the aggregate of the coatings? Is it not probable, or even certain, that the chemical qualities of the under coating are immediately reacted on by the subsequent coats? and is it possible, chemically, to isolate them when in the moist state, as the prior coatings must be as soon as the latter coat is applied? Is not the success of the operation due to the fact that the light has not the power to penetrate the mass of haloid presented for its action, and therefore never reaches the point at which the reflection, to which halation is due, commences? However this may be, the Sandell plate is certainly capable of producing such interior negatives as I have never seen here. My own experiments with them were not so successful, probably because I did not try them correctly.

ON THE TONING OF SOLIO PAPER.

[London Photographic Club.]

I HAVE thought that, instead of giving you a paper on the combined toning and fixing, it would be preferable to give you a few hints on the general toning of solio paper, in the manufacture of which I am personally interested.

We have now arrived at that point where the new printing-out paper is no longer in the experimental stage. It is largely used by the best photographers, both here and in America, and all speak in glowing terms of its superiority over albumen. This dear old friend albumen has had its death-bell tolled many a time before—certainly it has been the case every year during the last ten years—and yet it has lingered on, dying hard at the last. I think every one must see around them that albumen is giving place not only to the new printing-out papers, which must resemble it in appearance, but also to platinotype, bromide, and kindred processes.

As this is to be a practical paper, I do not intend to dwell too much upon the *pros* and *cons* of the process. With this paper we have the greatest range of tones that the most fastidious can desire. Of course, as with albumen, it is of the first importance to have a good negative. Having secured this, it is easy to secure a good print; but there is no doubt that with the new printing-out paper there is a far greater range to be obtained than with any other process. We have also at our command the capability of giving to

our prints either a glazed or dead matt appearance with but very little trouble.

On the question of permanency, there can be no doubt there is a greater chance of achieving this than with albumen, which we all know is so liable to go wrong; but to attain this, as with all photographic manipulations, it is necessary that due care be exercised with the various stages through which the print has of necessity to go. To say that a solio print is absolutely permanent would be taking a great responsibility upon myself, for in this mortal world of ours anything on paper could not be so; however, I will say we can obtain a reasonably permanent result. The fading of prints is, I believe, more often caused through unsuitable mounts and bad mountants than through any inherent defects in the prints themselves.

As with all new processes, it is necessary that we take some trouble to understand the little peculiarities incidental to its working; and when these are once mastered, you will be surprised at the simplicity of the whole thing. In the printing paper before us we have chloride of silver, in conjunction with a definite organic salt of silver, held in suspension in a vehicle composed mainly of gelatine, and this is coated on a paper with a baryta surface, which prevents its sinking into the fibres of the paper, and we have a more brilliant print, and the elimination of the hypo is more easily effected. To get even prints, and to prevent uneven toning, it is absolutely necessary that the paper should not be allowed to become damp before printing, and when separate toning and fixing baths are employed, care should be taken that the hands are not contaminated with hypo during the preliminary washing and toning, otherwise red stains will inevitably be the result.

As this paper is peculiarly susceptible to a diffused light, great care should be exercised in handling it in a very subdued light, both before insertion in the printing frame and during examination of the print, otherwise the high lights and purity of the resulting picture will soon be destroyed. It is not necessary to carry the prints to such a depth in printing as is the custom with albumenized paper, as the loss is not so great in the subsequent toning and fixing.

Now we come to the all-important question of toning. What bath shall we use? I think the first to engage our attention is the combined toning and fixing, about which there is such a divided opinion as to the permanency of the prints produced from it. There certainly is a distinct charm in the use of a combined toning and fixing bath, especially as no previous washing is required, the prints being taken direct from the printing frames and immersed in the one solution. There are amateurs who do not, and will not, use separate fixing and toning baths when there is one to be had that will do everything that is required in one bath. As long as too many prints are not toned in one bath, there is no danger of less permanency than with any other bath; but, if the gold is exhausted, the toning proceeds with the lead, and probably sulphur also, in which case the prints *may* possibly change, but I do not think they would fade. The chances are they may become darker, especially should there be any sulphur in the atmosphere, and I fancy there is a good deal in London. This will probably attack the lead, and form sulphide of lead. The opinion of any chemist here to-night on this matter would oblige. I have prints here which have been standing about on the mantelpiece of my sitting-room for over six months, and show no signs whatever of any change.

The formula recommended by the Eastman Company is as follows:

Stock Solution No. 1.

Hypo	6 ounces
Potash alum	1½ ounces
Sodium sulphate (Glauber's salts)	4 ounces
Water, make up to	60 ounces

First dissolve the hypo and alum in the water, then add the sodium sulphate.

Stock Solution No. 2.

Gold chloride	15 grains
Acetate of lead (sugar of lead)	50 grains
Water	7½ ounces

Note.—An orange precipitate is formed in No. 2 solution, which, however, redissolves on its being added to the No. 1 solution.

To form a combined bath take of—

Stock solution No. 1	8 ounces
Stock solution No. 2	1 ounce

Do not use until the mixture has become quite clear.

In all solutions composed of hypo and alum it will be found that there is always a slight white precipitate. This, however, does not interfere with toning. This bath is very useful indeed for giving soft prints from hard negatives. It is not advisable to attempt to produce purple or black tones with this bath.

For those who prefer a separate toning and fixing bath, and one that will produce warm, black tones, there is nothing better than the sulpho-cyanide bath. In order to have this bath under greater control, the addition of acetate of soda is of very great advantage; not only does it slow down

the toning action, but the prints are not so liable to take that very objectionable blue surface tint which sulpho-cyanide, *per se*, is so apt to produce; the tones of the prints can be more closely watched. Where possible, it is certainly better to tone by daylight rather than by artificial, as with the latter it is far more difficult to watch the various changes of tone. Of course it must be done in very subdued light. As I said before, no hypo must come anywhere near the prints during the toning, otherwise the prints will be irretrievably ruined with red stains that will refuse to tone.

Owing to the softening action of sulpho-cyanide on the prints, they should be washed in two changes of water, and then passed through a bath of alum water (alum half an ounce, water twenty ounces). After this they should be well washed in three changes of water, and then placed in the toning bath, as follows:

Stock Solution A.

Sodium acetate	600 grains
Water	20 ounces
Gold chloride	15 grains

Stock Solution B.

Ammonia sulpho-cyanide	50 grains
Water	20 ounces

For use, take of A 2 ounces, B 2 ounces, water 4 ounces. Allow to stand one hour before using.

The toning may be stopped at any stage by immersion in a bath of salt:

Common salt	1 ounce
Water	32 ounces

Moving.

For securing greater control and regularity of toning, it is advantageous to use two-thirds of an old bath and one-third of a new one, omitting the water.

After removal from the salt bath, the prints should then be transferred to the fixing bath. This should not be made too strong.

Fixing Bath.

Sodium hyposulphite	3 ounces
Sodium sulphite	1½ ounces
Water	20 ounces

The addition of sulphite is to preserve the purity of the tones.

There are some amateurs, in contradistinction to those who will have the greatest simplicity, who prefer formulas of the greatest complication (take, for instance, some of the developing formulas published), and it is for these that I bring forward the following not too complicated method of toning, in two toning baths, the second being a toning and fixing combined.

First tone very slightly indeed to a light brown in the following (the prints having been previously washed, as usual):

Potassium chloro-platinite	5 grains
Sodium chloride	40 grains
Citric acid	40 grains
Water	20 ounces

and immediately tranfer direct to the combined toning and fixing bath as first mentioned in my paper until the desired tone is obtained. This produces tones of a rich, warm black; but, if purple tones are desired, tone first in the sulpho-cyanide, and then follow with the combined bath. Certainly the tones produced by it are very fine.

Where prints are desired of a nice sepia, tone a little deeper in the platinum bath, and fix as usual in the ordinary way. Care must be taken not to go beyond the brown stage. Prints produced in this platinum bath only are best finished off with a matt surface. As my paper is intended to be devoted to toning only, I will leave the subject of finishing, etc., to some other member to take up.

J. J. B. Wellington.

Correspondence.

SHUTTER SPEED.

To the Editor of The Photographic Times.

Dear Sir: I have read with much interest the letter of Mr. Starnes on "Shutter Speed" in your last issue, and while thanking him for the interest he has taken in my bicycle photos, and description thereof, may I point out that he has apparently fallen into error in two of the data upon which he bases his calculation of the speed of my shutter.

1. He assumes that the scale of the picture is 1 in 36. From comparison of the measurement of the foremost figure on the picture with the actual size of the man and wheel the scale is really half that, viz. about 1 in 72.

2. He seems to have made no allowance for the acute angle at which the camera was placed with reference to the men, but has calculated as if at right angles.

Now let us make the calculation on these new data. 42 feet, or 504 inches, divided by 72 gives a movement on plate of 7 inches if at right angles, but camera stands at $\frac{1}{5}$ of a right angle or 18 degrees; 18 degrees in a circle of 7 inches radius gives $2\frac{1}{10}$ inches, which distance per second is the actual rate of movement on plate; a hundredth part of that, or $1\frac{1}{210}$ of an inch, the distance traversed in $1\frac{1}{1000}$ of a second, which rate Mr. Starnes admits will give a sharp picture. Comparison of the photos of the races in question sent you with this letter will show correctness of my claim.

Were the picture taken at right angles and to a scale of 1 in 36 the shutter undoubtedly would require a speed of $\frac{1}{1400}$ of a second and at an angle of 18 degrees with same scale a speed of $\frac{1}{1420}$ to give same sharpness.

Yours faithfully,

H. English.

Toronto, Canada, March 25, 1893.

Notes and News.

The Heliochromoscope.—Word has been received from Mr. Ives, who has arrived in London, that the outlook for the heliochromoscope is excellent. It will be remembered that Mr. Ives went abroad with a view of placing his ingenious instrument upon the English Market.

The Bad Weather has undoubtedly effected business this Spring, but now that the stormy season is past, and the days are increasing in length, the photographic business will at once receive a fresh impetus.

Bromide Paper seems to be coming into more general favor again. The dealers report largely increasing sales of bromide paper, showing that the consumers are returning to it as a reliable and convenient paper, both for contact printing and enlargements.

The Spring Demand for Hand Cameras is unprecedented, and seems to be greater for the higher price cameras such as the Henry Clay, than for the cheaper styles. The manufacturers of the Henry Clay, for instance, report larger sales for that all-around hand camera than ever before. The stereoscopic form is selling especially well this spring.

My Three-Legged Story Teller is an exceedingly interesting book. It consists of photographic stories written by Miss Adelaide Skeel for THE PHOTOGRAHHIC TIMES and other periodicals. It can be obtained free of charge by sending a new subscription to THE PHOTOGRAPHIC TIMES.

Don't you want it?

John R Clemons, of salted paper fame, was in New York last week, and called at THE PHOTOGRAPHIC TIMES headquarters. Though 72 years of age, Mr. Clemons retains the vivacity and vigor of his youth, and is as interested in all things pertaining to photography as ever.

A Sure Sign.—"Did Miss Sowerby have her photographs taken yesterday?"

"Yes."

"Good likeness?"

"Yes; must have been, for she refused to take them of the photographer."—*Wilson's Photographic Magazine.*

W. H. Walker, of the Eastman Co., has returned from London. He called at the editorial rooms of THE PHOTOGRAPHIC TIMES while in New York. Mr. Walker is in excellent health and spirits. He intends to take a long and well-earned vacation, visiting the World's Fair with his family while in this country, and not returning to London until late in the season.

Author of "The Constant Reader."—We learn from F. L Stuber, the well-known photographic artist of South Bethlehem, Pa., that he was the author of the artistic picture entitled "Constant Reader," which embellished our Bibliographic Supplement of March. It is a prize picture which won a forty-dollar gold prize in earlier days, and "it has brought me many a good customer," Mr. Stuber writes. He has lately opened a new gallery at South Bethlehem.

The first "Sun" Picture.—A search has been recently instituted by Chancellor MacCracken, through Robert T. Lincoln, Minister to England, for the first "sun picture" or photograph of the human countenance, made by Professor Draper, and sent by him to Sir John Herschell, the astronomer, which the University desires to place in its exhibit at the World's Fair. The search, thus far without result, is being carried on by Sir William Herschell among the papers of his father and among the archives of the Royal Society.—*The N. Y. Post.*

How to Disperse a Crowd.—Every out-door worker has, at times, experienced the annoyance of small crowds of people collecting in front of the camera when ready for exposing. Many dodges have, from time to time, been published for getting rid of them; the latest, however, which is certainly original, comes from the Halifax Camera Club, where, at its last meeting, Mr. J. E. Jones recommended "that one's wife should be sent round with the hat, which he considered would be effectual in making them move off." Very likely it would. But the method suggested presupposes one to have a wife—and, having one, that she would or could be made to go round with the hat. We should advise some of our married friends to try it on, and report the result.—*British Journal of Photography.*

An enterprising photographer has hit upon a new plan for increasing his business, which just, now when the days are pleasant, he is following with great success. He takes for his field of operation the better portions of the town, and, when the sun is warm enough to bring the children out in force, he goes forth with his camera. When a number of well-dressed children are encountered they are asked if they don't want their pictures taken. As may be imagined, the children are delighted with the suggestion. The photographer groups them artistically, takes an impression, and then gets the address of each. A week or two later he calls on the parents and offers the pictures, handsomely finished and mounted, for sale. The children surrounded by their companions in a pretty group is a sight which makes an instantaneous appeal to the parental eye, and it is an exceptional case when at least one or two are not purchased.—*New York Times.*

The firm of Kimball & Mathews, who have been located at 30½ North High Street, have been forced by the rapid increase of their business for the past year and a half to seek new quarters. This they have done and are now situated on a ground floor at No. 32 East Spring Street, a good location and plenty of room, having about 2,000 square feet of floor surface, which is covered with all the novelties of progressive photography that their trade may desire. The basement, which extends under the entire room, is filled with a solid mass of stock. A full line of accessory and background is carried and platforms are covered with cameras from 18 x 22 down to quarter size. Among the mammoth stock they have there are tons of the famous Collins card. Mr. L. J. Mathews and

the well-known salesman, Alf. E. Bennett, will handle the trade on the road. They will travel over Ohio, Indiana, Kentucky, West Virginia and Pennsylvania Their business in the future should be a grand success, as both members of the firm are young and fully qualified to handle their business.—*Columbus Dispatch.*

The Mystic Camera Club, of Medford, held an exhibition of photographs, the work of the members, at the club rooms, Thursday, April 6.

MISUNDERSTOOD.

Photographer (ready with the camera)—Just smile a little, please.

Kentuckian—Jupiter, that's just what I'd like. I'll take anything you've got around!

Photographic Societies.

THE PHOTOGRAPHIC SOCIETY OF JAPAN.

A REGULAR meeting of the above-named society was held on Friday, March 3d, at the rooms of the Geographical Society Nishi-Konyacho, Kiobashi, Tokyo, beginning at 5 P.M., Prof. C. D. West in the Chair.

The following gentlemen were unanimously elected members of the society: Mr. G. Tanaka, Mr. O. Keil, Mr. F. Nabbolz, Mr. O. Bergmann, Mr. F. Bengen, Mr. F. H. Trevithick, and Mr. H Hosoi.

Mr. Kajima Sebi showed a series of cabinet views taken by members of his household in competition and for prizes to be given by himself. He asked the members to decide as to the excellence of these, which was done accordingly. 1st and 2d prizes being awarded.

Some very fine photographs were exhibited sent by J. B. Edwards & Co., London, showing the difference between the photographs taken on ordinary plates and on their isochromatic plates; the contrast between these was very striking, especially in the photographs of flowers.

Mr. Kajima Sebi then exhibited an extraordinarily large bromide print (36 by 42 in.) taken direct on a negative in his big camera exhibited at a previous meeting. Some views taken by the Dalmeyer telescopic lens were sent to the meeting by Mr. W. K. Burton, he himself not being able to be present. The telescopic lens was again shown; this time fitted with gear to enable the focusing and spherical aberration adjustment to be made more readily. Mr. Beilter showed a new lens by Carl Zeiss, of Jena, called the apo-chromatic triplet. It is claimed that this is more complete and correct for spherical and chromatic aberration than any lens which has hitherto been produced and certainly some extremely beautiful views of cabinet size, taken with the lens were exhibited, as also some larger views on aristotype paper taken by the same instrument; these were much admired. Mr. Müoster exhibited J. Carpenter's Opera-glass Magazine Camera, with accompanying enlarging apparatus. The negatives taken with this instrument are 4.5 by 6.0 cm. in size, but they are most easily enlarged to 13 by 18 cm. by the additional apparatus shown. The members present showed great interest in this newest of photographic inventions.

The meeting terminated with a vote of thanks to the Chairman.

The Editorial Table.

Amateur Photography, by W. I. Lincoln Adams. New York: The Baker & Taylor Co.

This little book on amateur photography is, as its subtitle indicates, "A Practical Guide for the Beginner." It is written for those who know nothing whatever about photography, and is especially designed for the young amateur.

There are a number of elementary instruction books in photography, but none, so far as we know, which fills just the place this book will occupy. It treats of the various departments of photographic work in a simple manner, and covers the field as indicated by the following Table of Contents:

"Apparatus," "In the Field," "In the Dark Room," "Printing and Toning," "Portraiture," "Instantaneous Photography," "Flash-Light Photography," "Orthochromatic or Color-Sensitive Photography," "Composite Photography," "The Fathers of Photography" (An Historical Sketch); and an Appendix, consisting of Tables, Formulas, etc.

The book consists of ninety pages in all, neatly printed in good size type on excellent paper.

It may be obtained of the various dealers in photographic materials, and booksellers, and will be sent post-paid on receipt of price, by The Scovill & Adams Co. In paper covers, 50 c.; cloth-bound, $1.

A Premium.—We have made arrangements with the publishers by which we can offer "My Three-Legged Story Teller," by Miss Adelaide Skeel, to our readers as a premium with THE PHOTOGRAPHIC TIMES. Any one sending a new subscription to the magazine for one year with $5—the subscription price—will receive post-paid, by mail, a copy of this interesting book. It consists of the photographic stories written by Miss Skeel for THE PHOTOGRAPHIC TIMES and other publications, and is illustrated with reproductions from her own negatives. It contains over 200 pages of most readable matter, and should be in the library of every one who owns a camera. In paper covers, royal octavo, it sells for 50 cents, and will be sent, post-paid to any address, on receipt of that price.

Les Developpoteurs Organiques et le Paramidophenol. Auguste and Louis Lumière. Paris: Gauthiers & Villars.

THIS little book contains notes on the latent image, the atomic theory, paramidophenol and diamidophenol, as well as other organic developers. It is very scientifically and well written, but is not a book for the great mass of photographers.

The best and most useful article that has been gratuitously distributed to the photographic public this year, has recently reached our editorial table from Philadelphia. Queen & Co., the manufacturers of instruments, scientific and optical, are the publishers and donors of a diary for photographers, of which they have been kind enough to send us a copy. This diary, they say, "will be sent to any address on application." It comprises thirty pages very well arranged for the entry of the minutia of negatives that are worth recording by careful photographers.

"**The plates** (Imperial non-halation) are more than satisfactory for interior work and our dealers here are now going to keep them in stock," writes Mr. I. C. Thompson, of Bay City, Mich.

No. 2 of the Photographic Recorder which is being so ably edited by Mr. E. F. Zimmerman is a decided improvement on the initial number. It contains several original contributions from well-known photographic writers, the leading article, an excellent one entitled "A Bad Failure," by Harry Platt. Another valuable contribution is by Frank F. Woodard, on "Local Reduction."

Picture-Making in the Studio, by H. P. Robinson, New York, The Scovill & Adams Co.—This is No. 42 of The Scovill photographic series, and is, as we learn from the preface, a compilation in book form of a series of articles written by the author for The Photographic Times, with the addition of a paper communicated to the British Convention at its Edinburgh meeting.

It takes a good deal of ignorance of both art and photography to criticise anything that comes from the prolific pen of Mr. Robinson, in the way so dear to the average critic—the cutting-up style; and although we don't know much, or at least not nearly so much as we would like to, we know enough not to play the fool by trying. We therefore say at once that "Picture-Making in the Studio," merits unqualified praise, and should be in the hands of every photographer who knows or wants to know the difference between the average namby-pamby photographic portrait and the true picture that is a possibility of almost every type of sitter.

Although mainly devoted to show the simplicity and advantages of combination printing, at which he is *facile princeps*, the book is brimming full of good things in other directions, some of which, especially those on the natural limitations of photography, would vastly improve our own conventions if they could be brought home to the understandings of the executive of the Photographers' Association of America, whom he hits hard, but not harder than they deserve.

Here is the key-note of a cure for many absurdities: "Photography is a real thing, and although it is not always bound down to literal fact, there is not much room in it for that 'artistic license' which used to excuse any vagary of the painter. Its subjects should be selected from the incidents of our own time, but if we depart from them, let there be no false pretense. If we represent a lady in a Greek dress, call it frankly a lady in a Greek dress, and not Aspasia. She does not live now, and you cannot photograph her."

In one paragraph it seems to us that Mr. Robinson stretches his good nature just a little too far. He says "American photographers are to be congratulated on their portraits of children. It is better as a rule than we do here." He has seen Faulknor's children, and those by several others equally as good, and we are quite sure that he never saw anything from that side that at all approaches them.

The book in its get-up is uniform with the rest of the series, but it has the advantage over most of the others of being in much larger type, a great blessing to those of us who are within measurable distance of three score and ten. If photographers knew what was good for them, a second edition of "Picture-Making in the Studio" would be immediately required.—*The Photo-Beacon.*

CURIOUS.

Tramp—Will you make a photograph of me?

Photographer—What do you want with a photograph, anyhow?"

Tramp—Well, I've just had a square meal, the first one in a year, and as I don't expect to get another in nine months I just want to see how I look after it!

Queries and Answers.

54 J. M. B.—"I have been using the amidol developer for some time, and must say I am on the whole well pleased with it. I do find, however, that it stains your clothing if you are unfortunate enough to get any of the developer on them. I also find it difficult to remove it from towels, etc. If you can inform me of any chemical that will remove the stains, I would be very thankful to you for the name of that chemical.

"I would not care to use any other developer, but unless I can remove the stains, I will have to give up using it. Strange to say, the developer does not stain either the films or plates."

54 *Answer.*—Dilute hydrochloric acid will remove amidol stains readily; still better is freshly prepared hypochlorite of zinc (the S. P. C. hypo eliminator), and subsequent washing of the fabric in hypo sulphite solution.

Not all samples of amidol stain perceptibly; some do so less, or not at all, others more.

55 H. of M.—In number for Dec. 30 you have, page 669, an article on Heliochromy, which gives occasion for several explanations:

1. How is bichromated albumen or gelatine prepared? I have tried some experiments with ordinary gelatine and bichromate of potash, and it did not become insoluble by exposure to light. Please give formula. Also time of exposure.

2. The prepared plate is to be "exposed in the camera resting against a mirror of mercury." How is this mirror of mercury prepared? Is it horizontal with the plate floating on the surface and the camera pointing to the zenith, or if the camera is in its usual position, how is the mirror confined to make it stand upright?

55 *Answer.*—1. Beat the whites of hens' eggs into froth, allow to settle and filter, and add to each 4 ounces of it, 62 grains of bichromate of potassium, and so much of aqua-ammonia till the solution turns to a bright yellow, or dissolve half ounce of Nelson gelatine No. 1 in 4 ounces of water, and make additions as heretofore described.

A perfectly clear, absolutely transparent negative requires from 6 to 10 minutes exposure in direct sunshine. How long to expose for a spectrum you must find out by experiment.

2. Construct a cell of two pieces plain parallel glass, between them near their margins a strip of virgin rubber and fasten together by means of clamp screws, pour the mercury in and erect in the camera in close juxtaposition with the sensitive plate. Or let one side of the cell be the sensitive plate. The distance between the two glass plates, or glass plate and sensitive plate, need be but small, one centimetre, even a milimeter thickness of mercury being quite sufficient. Or you can pour the mercury into a flat tray, and lay upon it the sensitive plate focused correctly previously, but in that case the lens must or course be pointed towards the zenith.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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" " three month's trial 1 00

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Subscriptions to THE PHOTOGRAPHIC TIMES received by all dealers in photographic materials in this and foreign countries, also by the American News Co. and all its branches.

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Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

SOLD OUT! SOLD OUT!

THE publishers of "The American Annual of Photography and Photographic Times Almanac" for 1893, beg to announce that the entire edition consisting of over 18,000 copies has been exhausted, and that they are unable to fill further trade orders.

They offer to announce in these columns without charge, the name and address of any dealer who may still have a few copies for sale. They request that such dealers will kindly notify them at once, as they are constantly receiving requests for the "Annuals" which they cannot fill and they wish so far as possible to facilitate the means by which every one who desires a copy of the book may obtain it.

WHERE YOU CAN OBTAIN THE AMERICAN ANNUAL FOR 1893.

T. R. Crump, of Louisville, Ky., reports ten copies unsold.

Griffen & Bolwell, of Scranton, Pa., have a few copies yet unsold.

A. M. Knowlson, Troy, N. Y., reports a number of copies of "The American Annual" for 1893 still on hand.

Lenox Photo Supply Co. report a few copies of the Times Annuals still on hand.

C. R. Savage, of Salt Lake City, Utah, reports 20 copies of the '93 Annual yet on hand.

Frank N. Blake, of North Adams, Mass., announces that he has ten (10) copies in paper covers still unsold.

H. A. Hyatt, of St. Louis, reports a few copies left.

Hugh Morrison & Sons, of Pittsburg, writes they have twelve copies.

W. D. Gatchell, agent, photographic materials, at 343 W. Jefferson St., Louisville, Ky., reports a small number of The American Annuals for 1893 still in stock.

R. M. Davis, 1728 Arapahoe St., Denver, Colo., has some copies of "The American Annual of Photography and Photographic Times Almanac for 1893" still on hand, all in paper covers.

Vallentine & Dickerson, 637 Broad St., Newark, N. J., report that they have seven copies remaining of "The American Annual of Photography and Photographic Times Almanac for 1893."

The Geneva Optical Company, 67 Washington St., Chicago, writes that "a few copies still remain unsold on our shelves. * * * There is but one opinion expressed as to the book itself—'Unequalled and indispensible.'"

E. J. Horsman, 341 Broadway, reports eleven copies in paper covers.

Geo. J. Wolf & Co., 918 Arch St., Philadelphia, report some unsold copies in paper covers.

Butts & Adams.—"The modern and progressive" photographic stock house at 457 and 459 Washington Street, Buffalo, N. Y., report that they have a few of the '93 Annuals for sale, both in paper and cloth.

Messrs. E. M. Newcomb & Co., dealers in photographic apparatus and supplies, at 69 West 36th Street, New York City, write in regard to "The Annual" as follows:

"We have copies of '88, '90, '91, '92 and '93 Annuals, paper and cloth, and will sell them at the list price until exhausted. We have one copy of the Edition de Luxe, 1889, at $25.

THE OBRIG CAMERA CO.

THE SCOVILL & ADAMS CO.

Gentlemen:—Replying to your inquiry relative to "Times Annuals" for 1893, we would say that out of the large supply (twice replenished) that we got of you, we have only four (cloth bound) remaining.

THE OBRIG CAMERA CO.

The Photographic Times is a weekly journal devoted to the art and science of photography, has been received from the publishers, and is a useful as well as an interesting journal. It contains a full-page photo of President Cleveland which is an excellent likeness, also papers on Pin-holes, Oyster Shells and Coloring of Lantern Slides. Besides many others all of which are practicable, and all photographers and amateurs should have it.—*New York Daily.*

TRY DR. ANDRESEN'S AMIDO DEVELOPER.

Business Notices.

WANTED.—A copy of THE PHOTOGRAPHIC TIMES, of February 19, 1892. Address J. M., care THE PHOTOGRAPHIC TIMES.

FOR SALE.—A 4 x 5 Scovill Hand Camera, with Instantaneous Lens, Eastman Roll-holder and one double Dry Plate Holder; cost when new $75; will sell cheap. Also a 5 x 8 Anthony's Phantom Camera and a 5 x 8 Rapid Aristoscope Lens. WILLIAM CHAMBERLAIN, JR.

WANTED.—Photographic tent and outfit. Give full particulars and price. Address D. W. DIAMOND,
600 West Quartz St., Butte City, Montana.

FOR SALE.—5 x 7 Henry Clay Camera. Address
EDMUND A. DARLING, P. O. Box 439
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WANTED.—May 4, 1888, September 12, and July 4, 1890, PHOTOGRAPHIC TIMES. COMPLETE FILE,
Care THE PHOTOGRAPHIC TIMES.

FOR SALE.—The Photographic Stock business, formerly owned by E. J. Partridge. This is a good business in a good locality for any one wishing to establish themselves permanently. For full particulars apply to
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GRIFFIN & BOLWELL,
138 Wyoming Ave., Scranton, Pa.

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WE ARE MAKING Exhibition Prints in Platinotype for the World's Fair for Photographers, Colleges, State Historical Societies and others. Send for price lists.
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FLASH-LIGHTS AND HOW TO TAKE THEM! A complete treatise on Flash-Light work. Fully illustrated by Louis Clarence Bennett. Price, 50 cents, Order a copy now from THE SCOVILL & ADAMS CO.

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PERFECTED BRADFISCH Aristotype Paper leads the world! It does not stick, nor does the surface of the print rub off.

PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never lose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
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LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

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FOR SALE.—Leading Photograph Gallery on Third Avenue; well established; good business; fitted for first-class work; owner going West. For terms address
PHOTO., care THE PHOTOGRAPHIC TIMES.

S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography; no other has attained to equally fine results.
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WE HAVE JUST received another consignment of German Glass Baths. These are *perfect* goods, and admit of the dipper to the very bottom. We offer them at the following prices;

Size, 4 x 5	each,	$0.80
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" 7 x 10	"	1.30
" 9 x 12	"	2.00
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Heavy, durable quality, specially made for photographic use. Cover clothes from neck to below knee. One dollar ($1) postpaid. State height when ordering.

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With para-amidophenol there is no staining of the film, as with eikonogen and hydrochinon when development is prolonged, absolute transparency and opacity is secured, and the time of exposure is reduced about 30 per cent. without injury to half-tones and middle tints.

FORMULA FOR DEVELOPER.

Para-amidophenol (pure).	100 grains.
Sodium sulphite (crystals)..	3 ounces
Potassium carbonate...	1½ ounces
Water.	32 ounces

FOR USE.—Take 1 ounce of the above solution and from 2 to 4 ounces of water, according to the length of exposure.

The stronger the solution the greater the intensity of the resulting negative; the more diluted the solution the greater softness and more detail.

PURE PARA-AMIDOPHENOL HYDROCHLORATE,

IN ONE-HALF OUNCE BOTTLES,

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Who have experienced the difficulty in obtaining reliable aristotype paper in uniform quality at short notice, will appreciate the new **ACME** emulsion paper which has recently been introduced ready prepared for taking the silver sensitizing bath. It is easily worked, very much like the old reliable albumen paper, and gives uniform results, producing an effect **EXACTLY LIKE ARISTOTYPE PAPER,** but without any danger of blisters or the other annoyances which frequently occur with that paper.

The **SENSITIZING BATH** is as follows:

Silver Nitrate.	1 ounce
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Float two minutes and fume for twenty minutes in the vapors of Ammonia.

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FOR PURPLE TONES.

Borax.	6 drachms
Water.	2 pints
Gold.	6 grains

FOR BLACK TONES.

Sulpho-cyanide Ammonia.	6 drachms
Water.	2 pints
Gold.	6 grains

The combined fixing and toning bath, described on page 447 of THE PHOTOGRAPHIC TIMES, Vol. XXII., gives also excellent results.

This paper can be worked by any one, and always gives satisfaction. It is so simple and reliable that it will unquestionably supersede to a great extent the ready-prepared aristotype paper now upon the market.

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The cards for these Albums may be quickly and securely attached to the guards after the prints are mounted and burnished.

Price-list, including 25 sheets of Collins' best quality White Cards:

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A first-class retoucher; send specimens, and also state salary expected. Address Paul Tralles, 808 Seventh St., N. W., Washington, D. C.

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Position in photographic stock house; have had eighteen years' experience; can give satisfactory references. Address "M.," 304 Van Houten St., Paterson, N. J.

As general assistant or aristo printer; best of references. C. M. Grotz, Eagle Block, Delphos, Ohio.

A first-class operator and retoucher is open for an engagement; capable of taking full charge of gallery; can also work up crayons; samples and references sent if desired. Address B. F. Cooke, Artist, No. 49 Ruby St., Lancaster, Pa.

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S. P. C. Amido Developer, made from Dr. Andresen's Pure Amido.

TWO TESTIMONIALS:

"I want to say that Dr. Andresen's Amido is immense. I recently made some lantern slides with it, and found that with one-third the exposure which other developers required, Amido developed beautiful positives, just like wet plates, in appearance. It is very energetic and powerful; but the best of it all is, that it makes a dry-plate slide look like the beautiful old collodion plate. I used the S. P. C. Amido solution." JOHN C. HEMMENT.

To the Editor of THE PHOTOGRAPHIC TIMES:

Dear Sir: * * * * * * * * * * * * * * * * * * I send you also a lantern slide made with the Amido developer, as you said that you had never tried it for diapositives. I found it works better for slides more highly diluted than for negatives, viz.: ½ ounce of your developer with 2 or 3 ounces of water, and this is sufficient for a dozen slides. I like it greatly. DR. S. B. WARD.

[The slide is of an excellent neutral color, with splendid details and of absolute clearness.—Editor of THE PHOTOGRAPHIC TIMES.]

Put up in eight ounce (8 oz.) bottles, with full directions for use.

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The skylight room and laboratory used by these classes are on the seventh floor of No. 423 Broome Street, New York. (Take elevator.) Separate classes for ladies.

Cost of Course of Ten Lessons, including entrance fee, printed lessons, and materials used in demonstration, $7.50.

Special Single Lessons, per hour, each, $1.

Cost of Ten Lessons in Portraiture, or special subjects, $10.

The Corresponding Class may be joined at any time. Tuition fee, $7. Course of instruction, one year.

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After completing a regular course of instruction in either class, students may compete for a Chautauqua Diploma.

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40 Cut Films. No Holders required. Perfect Shutter. Beck's Autograph Lens.

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Reproduces all the detail from the negative better than any other. It is easy to work and finishes superbly.

THE GENIE HAND CAMERA.
Interchangeable Magazine holding either 24 Films or 12 Plates. The Beck Lens. Most compact.

If your Dealer does not have the above, write

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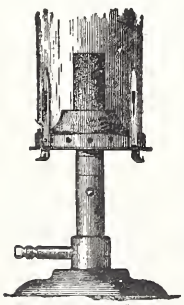
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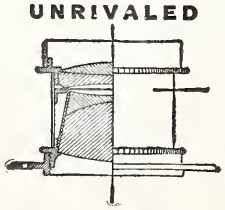
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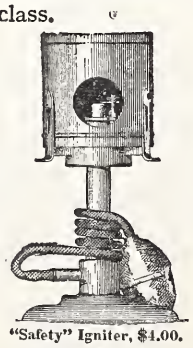
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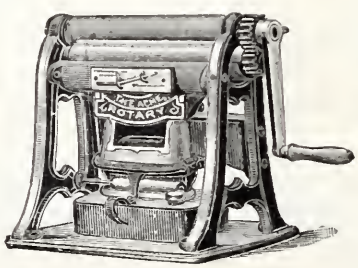


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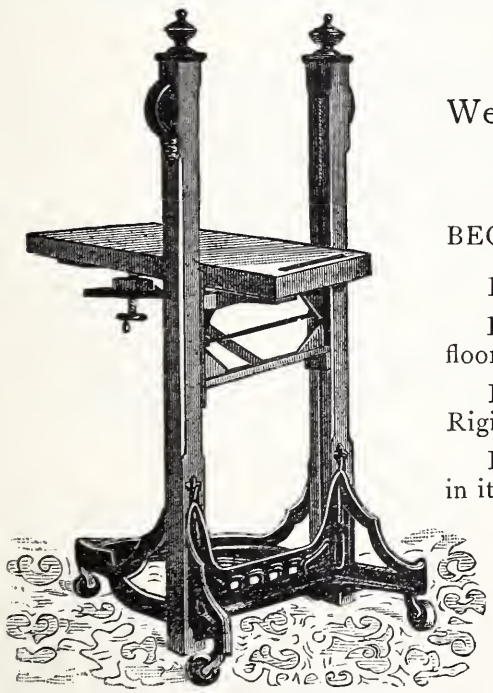
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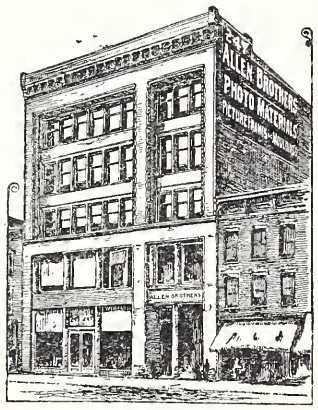
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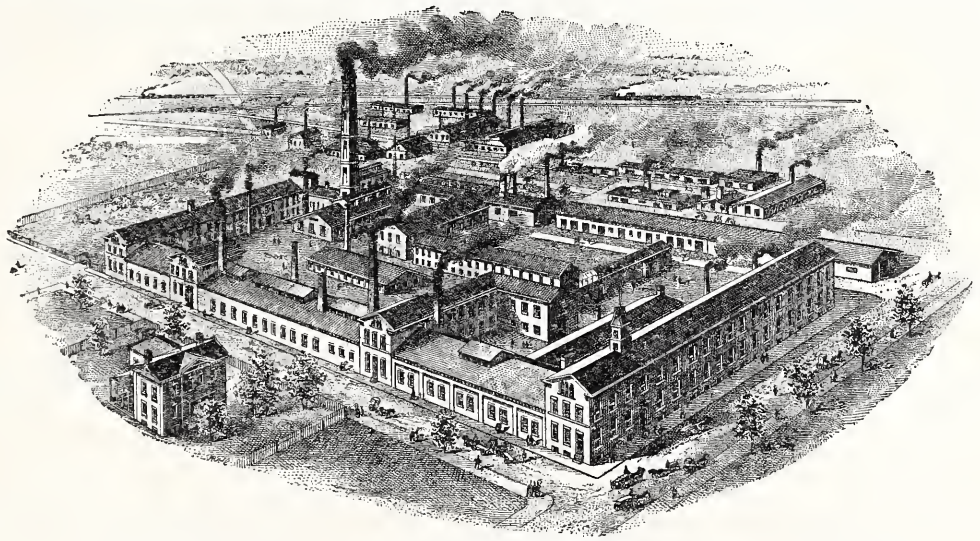
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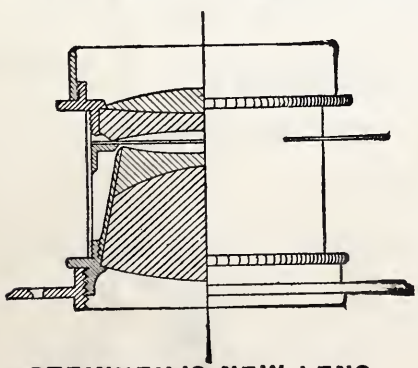
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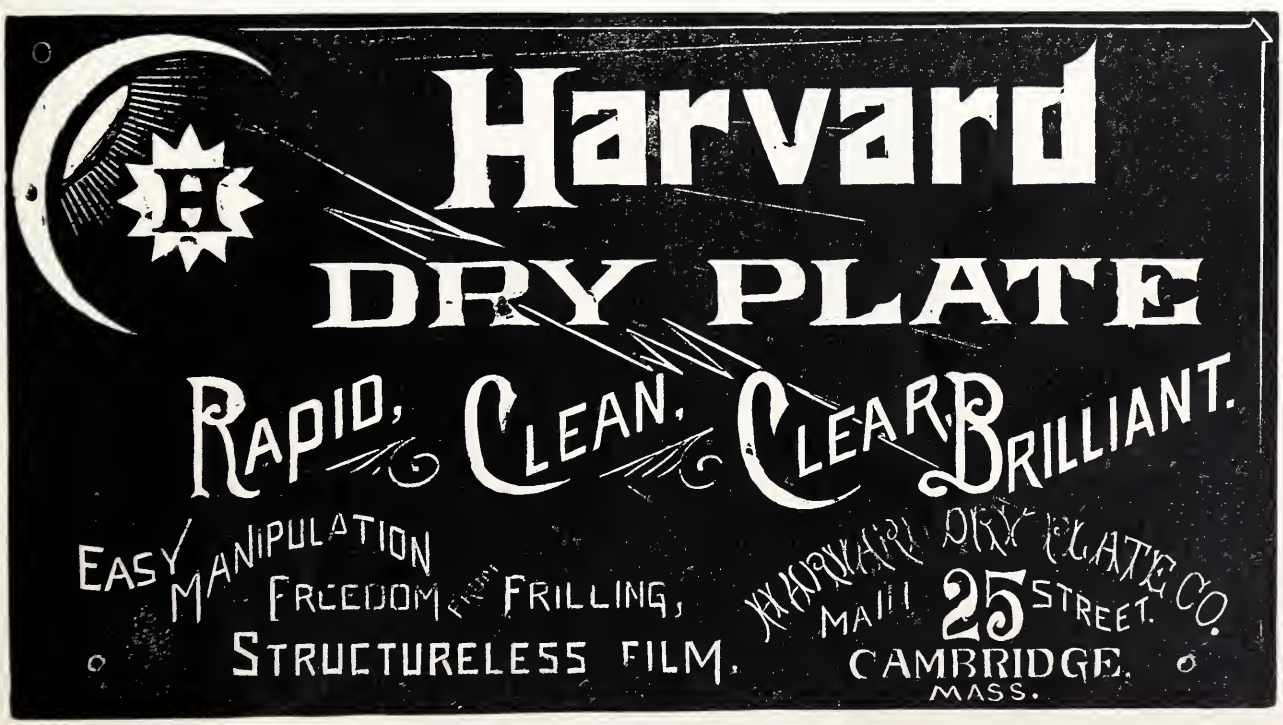
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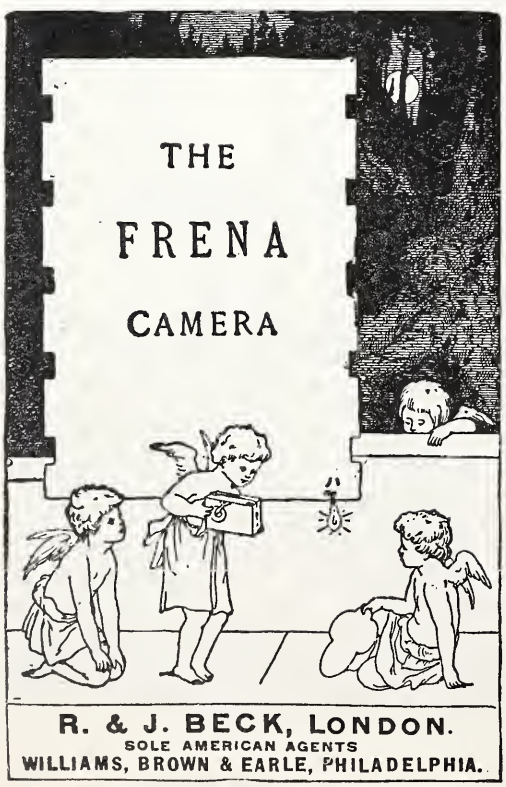
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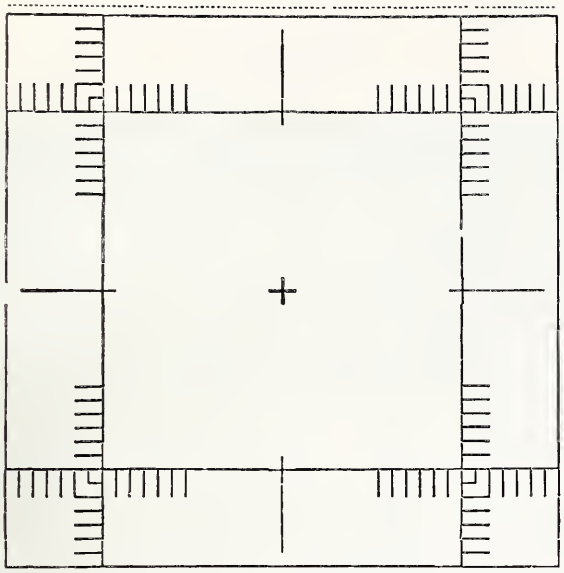
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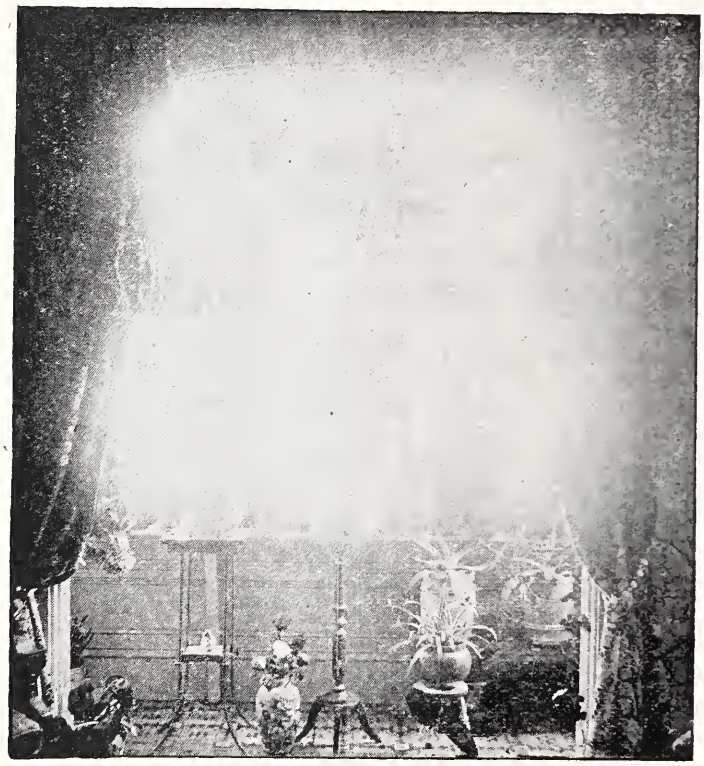
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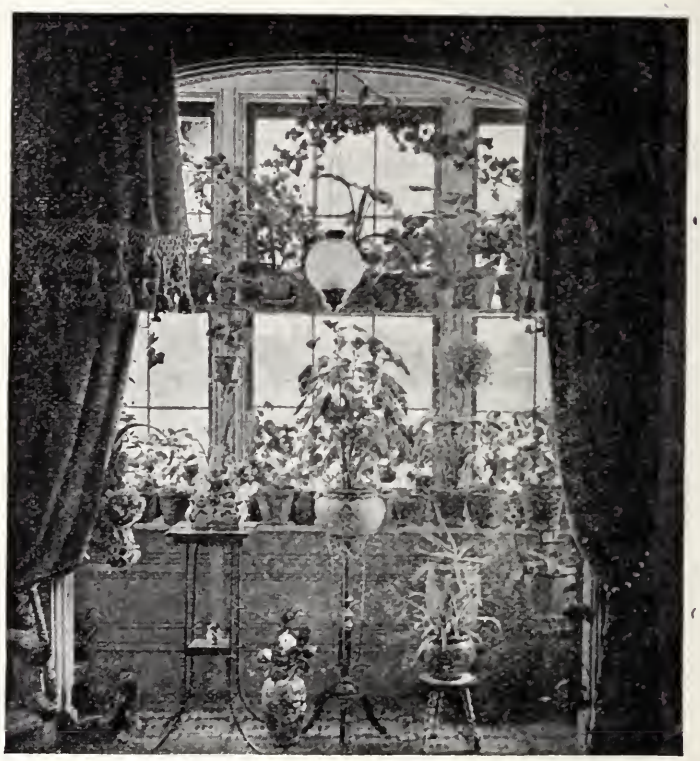
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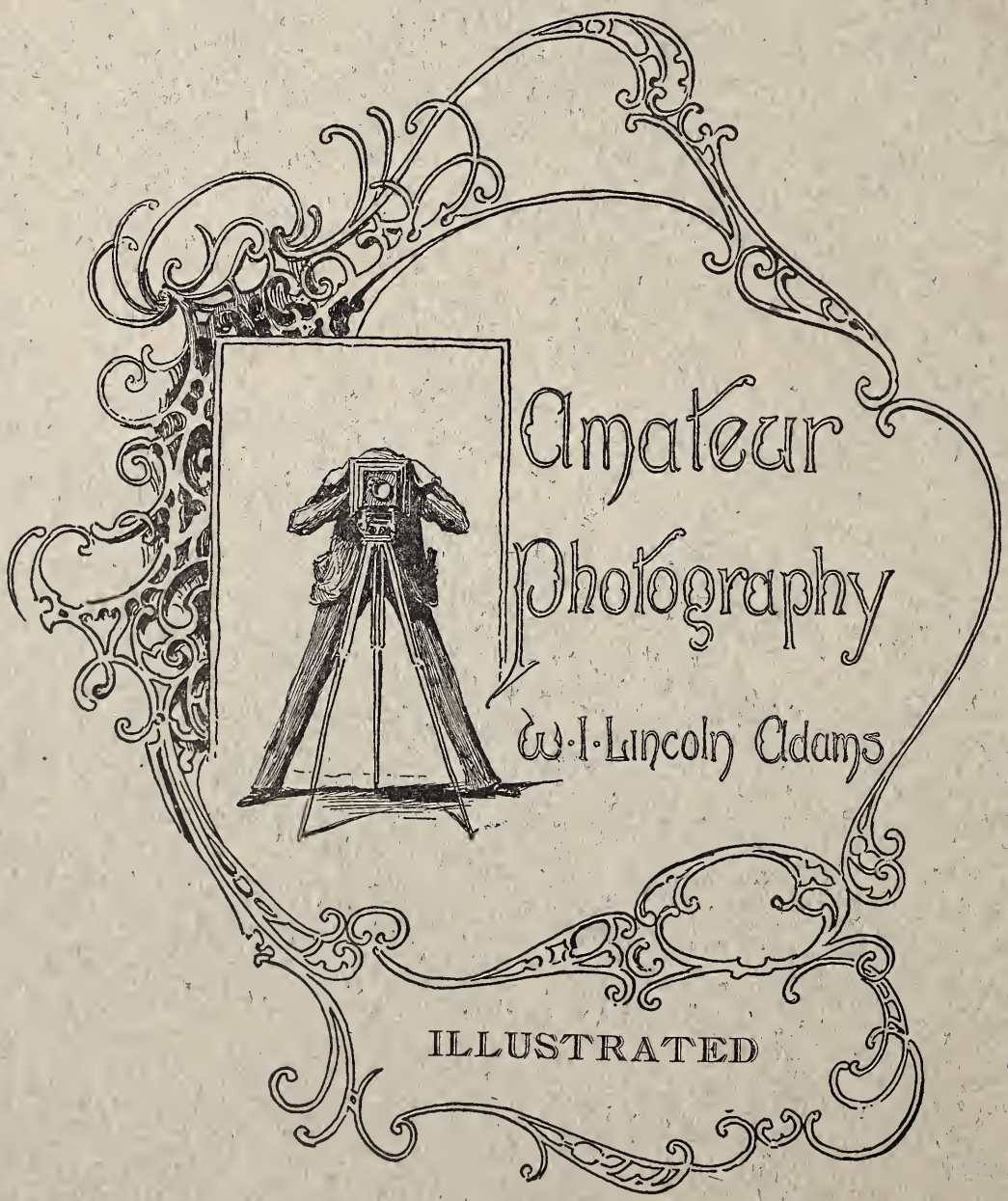
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B. W. Kilburn

THE PHOTOGRAPHIC TIMES.

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BENJAMIN WEST KILBURN.

IN announcing the fact that Mr. B. W. Kilburn, of Littleton, N. H., had been granted sole right to make stereoscopic photographs in and of the Exposition Grounds at Chicago, in our editorial entitled "Photography at the Columbian Fair," which appeared in the February 3d issue of THE PHOTOGRAPHIC TIMES, we took occasion to compliment the authorities who had this matter in charge for having made so excellent an appointment. As we then said, "No better photographer could possibly be found throughout the length and breadth of this land for this particular work." We briefly referred to Mr. Kilburn's peculiar qualifications for successfully accomplishing the great undertaking; but limited space prevented any extended explanation of these qualifications, or, indeed, anything but the mere statement of a few facts.

It is therefore with especial pleasure that we present our readers this week with the excellent portrait of Mr. Kilburn which adorns our magazine as its frontispiece. The negative was made by W. G. C. Kimball, of Concord, N. H., several years ago, but still remains the best likeness of Mr. Kilburn extant. Though sixty-five years old, Mr. Kilburn is as vigorous to-day as ever and is really better fitted to undertake the important work before him than ever before in his life, for he has the invaluable experience of nearly forty years active service with the camera.

Benjamin West Kilburn, named for his uncle, Judge Bonney, a celebrated lawyer of New York City, who in turn was named after the renowned artist, Benjamin West, was born at Littleton, N. H., December 10, 1827. He lived upon a farm until he was sixteen years old, when he went to Fall River, Mass., to learn the machinist and moulder's trade. There he remained four years thoroughly mastering the trade which he had adopted and returned to Littleton in 1847. He at once formed a partnership with his father in the machine and foundry business under the name of J. Kilburn & Son. It was carried on by the father and son until 1883, though B. W. Kilburn had taken up the serious work of his life—the work of the camera—in 1855. In 1853 Mr. Kilburn married Caroline L. Burnham, and of this happy marriage there is one child, Mrs. D. C. Remich, who, with her husband, lives with Mr. and Mrs. Kilburn at Littleton.

When Mr. Kilburn started in the stereoscopic view business he was associated with his brother, Edward Kilburn, also of Littleton, with whom he formed a partnership under the firm name of Kilburn Brothers. B. W. Kilburn did the active photographic work, and confined himself entirely to the White Mountains and the surpassing natural scenery of northern New Hampshire. This partnership was dissolved in 1875, Edward Kilburn's interest being purchased by his brother, who continued the business alone until within a short time, when he formed the present company by taking in, as a junior member of the firm, his son-in-law, Mr. D. C. Remich.

The business had a remarkable growth. From originally possessing negatives only of the White Mountains and vicinity, made of course by the old wet-plate process, Mr. Kilburn has now a collection numbering perhaps 75,000 negatives made in nearly every country of the globe. Almost all the negatives were exposed personally by Mr. Kilburn, and for a great many years they were all developed by him. The demands of business in later years, however, has necessitated his training a corps of bright young assistants who do most of the dark-room work for him. But the active photographing is still done by Mr. Kilburn alone. He uses a camera specially constructed for him by The American Optical Co., for tripod work, and a stereoscopic Henry Clay camera for hand work. He has a very large collection of lenses, and always has on hand several cameras with interchangeable holders

so that he can make a great many exposures in one day, assisted, of course, in the work of changing the plates and transporting the apparatus by his trained young men. Not only has the firm of B. W. Kilburn & Co. negatives from nearly every country in the world, but their views are sold throughout all the civilized countries of the globe. This is accomplished by means of special agents, concerning which more is said in the following note on Mr. James M. Davis, who is the general agent and manager for the sale of photographs. The present factory, where the photographs are made in Littleton, is 120 feet long by 36 feet wide and four stories high. The firm employs about one hundred hands and is capable of turning out during the year over five million photographs. There will be no trouble whatever in its being able to supply the demand of World's Fair pictures both at Chicago and throughout the country as well.

Soon after forming the partnership with his brother, Mr. Kilburn gave up the active management of the foundry and machine business to his father, and devoted his undivided energy to the making of negatives, working early and late, and making a collection of White Mountain views which has never been surpassed. Mr. Kilburn's natural perception of the beautiful enabled him always instinctively to select the most pictorial view of the natural scene or object and his innate poetical temperament revealed picturesque possibilities to him in groups of men or children on the street or at their play. Mr. Kilburn was a lover of nature long before he became a photographer. As a mere boy he was an expert with the rifle, and was a most indefatigable hunter, ranging over the wild hills of northern New Hampshire in the days when they were unvisited by outsiders even in the summer months, and when wild deer and bears could be shot on the outskirts of the little town of Littleton itself. It was this love of the wild, free life which probably did more than anything else to cultivate a sense of the beautiful in young Kilburn, even before the camera was a known instrument. His experience with it has quickened and matured his natural gifts, so that now, though unskilled with the pencil or brush, Mr. Kilburn is really an artist of a very high order. His best friends are artists and nature lovers, and he has a magnificent collection of paintings by American landscape artists, including several canvasses by such men as Hill and Halsall.

Mr. Kilburn is universally esteemed where he is known and in his native town of Littleton is greatly beloved. Though public office has repeatedly sought him he has persistently declined anything of the kind. He is devoted to his camera and his home, and when he is through for the day with the one, he repairs to the other, and has no ambition for anything outside of that beautiful home filled with its objects of art and souvenirs of his extensive travels, and nestling, as it does, in a most picturesque manner beneath the ancient mountain on the banks of the Ammonoosuc River. Of this home the writer would fain speak at length, for it has been his valued privilege to be numbered among its inmates on many occasions; but these are things which do not interest the general reader. Suffice it to say that Mr. Kilburn is an ideal husband and father as well as an expert photographer. He is a broad-minded, useful citizen, quick to respond to all appeals for necessary aid, and to assist in any useful or philanthropic work.

He ascended Mount Washington in mid-winter, when no one else could or would go, and rescued the government observatory officer, who had been unable to reach the signal station on the summit, at the risk of his own life. He was one of the very first to volunteer at the outbreak of the civil war, hurrying on to Washington with his rifle, at his own expense, and remaining there in active service until the troops arrived and rendered the city secure. Subsequently he served in the volunteer army, participating in the battle of Fredericksburg and other engagements.

Mr. Kilburn's grandfather was the sturdy John Kilburn, who, with his son, hired man, and the two women of the household, drove off three hundred Indians, who had attacked him in his block-house at Walpole, on the outbreak of the French and Indian war. Mount Kilburn was named in honor of this hero of our pioneer days, and an appropriate granite monument now stands in Walpole in memory of his gallant defence. We may trace the predominant qualities in B. W. Kilburn's character to this truly heroic ancestor, and we find in the grandson a most worthy descendant of the justly honored grandfather.

JAMES M. DAVIS, General Agent for B. W. Kilburn & Co.'s Stereoscopic Views, has taken a special interest in the Columbian World's Fair pictures. It was largely through Mr. Davis' suggestion and co-operation that the exclusive privilege of making stereoscopic pictures of the World's Fair Grounds was obtained by Mr. Kilburn. Mr. Davis will have the sole management of the sale of these pictures outside of the World's Fair Grounds, within his extensive territory, which is the same as saying that they will be sold over a large portion

of the civilized world and in many places that might almost be said to be uncivilized.



Mr. Davis is a most enterprising business man. He has no less than four principal offices, one at 1015 Arch Street, Philadelphia, Pa., another at 1207 Dolman Street, St. Louis, Mo., still another in the City of Mexico, Mexico, and the fourth at 19 St. Michael's Road, Liverpool, England. He has a small army of agents under him, constantly canvassing the various districts to which they are appointed, and making their reports to him or to his sub-agents at some one of the principal headquarters. Mr. Kilburn writes, that in his opinion a manufacturing firm never had a better agent than Davis. He is moreover a man of irreproachable character, and of very pleasant manners.

He is entirely a self-made man, having been left an orphan in the fifth year of his age. His mother with six small children moved from the town of his birth in Randolph County, N. C., to Lawrence, Kansas, at the approach of the war, in 1860. As soon as he was able to do any work young Davis helped in the support of his mother and four sisters by working on a farm, and remained with them until he was twenty-one years of age. Of course, he was unable to receive much education during this time, except that which he could pick up himself at odd times. In the fall of 1874 he went to Iowa and worked on a farm in that State for one year. He then entered Penn College in Oskaloosa, where he remained three years, and did not take up the business of his life until in the fall of 1878. Since then he has been engaged in managing the ever increasing interests of the stereoscopic view business.

TRANSFER PROCESSES.

A SIMPLE process by means of which photographic prints could be made and then transferred to various supports has long been a *desideratum*. The carbon process may be said to fulfil the necessary requirements to a certain degree. But then it is but few who have mastered the difficulties attending this method, whereas the ordinary silver printing process is familiar to all who can claim to be photographers at all.

Some time ago a process was introduced somewhat similar to the one we are about to describe. It consisted of a paper coated first with a soluble gelatine and afterward with an insoluble bromide emulsion. Prints were made on this paper by development and afterwards transferred to other supports by simply immersing in hot water and so dissolving the soluble gelatine and removing the paper.

In introducing this paper, however, the manufacturers overlooked a very serious consideration which, indeed, afterwards compelled them to give the process up entirely. This was, that the action of the alum used to make the bromide emulsion insoluble, was continuous and rapidly worked upon the underlying film, rendering it also insoluble. The consequence can be plainly seen. Paper unless newly manufactured was of no use whatever, as in many cases boiling water refused to dissolve the underlying film and the temporary paper support remained a permanent one.

It was our own troubles with a transfer paper of this description that led us to make a score of experiments to obtain a more perfect process.

Our first attempts were made with a gummed paper. Obtaining some paper coated over with gum arabic (obtainable at almost every stationer's). We prepared this with a gelatino-chloride of silver printing-out emulsion. Upon this we could then make silver prints in the ordinary way and by sponging the back with water the paper support could easily be removed and the picture transferred to wood, china, glass or whatever support was desired. It was then toned and fixed upon the new support. We found that merely squeegeeing the print was sufficient to make it adhere firmly to most kinds of supports.

The chief drawback to this method was undoubtedly the necessity for toning, fixing and washing the picture while upon the new support. It certainly was possible to remove the thin film from the paper by immersing it in water and then treating it in this state; but the film being very thin and tender the chances of injuring it were considerably increased.

Our next efforts were directed in such a way as to obtain a process with which it would be possible to manipulate the picture thoroughly before its transfer to the final support.

For this purpose we used a shellac solution which would not be affected by water but which could readily be dissolved in methylated alcohol. A paper we found most suitable for this purpose was one coated over with a varnish made as follows: Four ounces of borax and one ounce of sodium carbonate are dissolved in three parts of water. This is then heated to boiling point and one pound of white shellac added. This is kept boiling until all the shellac is dissolved. It is then allowed to cool. The simplest way of preparing this paper is to draw two sheets, placed back to back, rapidly through the solution. Drain off the superfluous fluid and hang up to dry. When dry this paper is again coated with a gelatino chloride emulsion. It is then possible to make prints, tone, fix and wash then, in the ordinary manner. When required to transfer them to the final support it is only necessary to lay in methylated spirit and the shellac film will rapidly dissolve away, the paper is removed and the image will be found firmly adhering to its permanent support. We know of no better method of transferring pictures to china, wood or other substances.

EDITORIAL NOTES.

WE call the attention of our readers this week to the important article by Professor W. K. Burton, of the Imperial University at Tokio, Japan, and especially to the postscript of that article, which arrived some time after the main article was received. "I do not want to crack up my own work," writes Professor Burton, in regard to the results of his experiments, which he here reports, "so I state nothing about any actual value that the results may have with relation to the results of other experimenters, but merely say that I consider them far the most important results that I have yet got from my own experiments. I am sending an elaborate paper on them, along with the actual plates exposed, to England, to be read before some Society. Now I should like that the preliminary note on these experiments should reach American readers, first through THE PHOTOGRAPHIC TIMES, and I therefore send them direct to you, without delay."

"DO PERMANENT photographs fade?" would be a rather curious question, but nevertheless it is a fact that we have seen many so-called permanent pictures rapidly being affected by the action of light. We refer to pictures by such processes as the collotype and other photo-mechanical printing methods which have always been considered as permanent in its best sense. That such is not always the case, however, we have only too good a reason to believe. But for the cause it is not difficult to seek. The process itself is not to blame, but the pigments and paper used. Fugitive pigments are often used in the ink to give pleasing tints. The chief cause, however, rests with the improper selection of the paper itself. Many use an inferior kind of enamel paper tinted with a dye of some kind which in most cases is more or less evanescent.

FROM all reports the photographing of the recent solar eclipse has been most satisfactory. All the conditions were favorable and the work was done under better advantages than have ever been possible. Astronomers are much elated over their success, and hope to learn much from the results.

MR. GEORGE STECKEL, of Los Angeles, California, is rapidly making his way to the very first rank of professional photographers in this country, if he has not already attained that enviable position. Mr. Steckel deserves all the success which has crowned his efforts, for he is entirely a "self-made man." He began his photographic career in Allentown, Pa., from which place he removed to Kansas City, where he invested the proceeds of his previous business success at Allentown and a small amount of money left by his father, in real estate, and just in time to get caught in the general crash which took place in that city in September, 1887. He lost nearly his entire investment, but with commendable energy, gathered together what he could save from the wreck, and proceeded to Los Angeles, where he once more embarked in photography, and this time on a larger scale than ever before. He at once became the leading photographer in this region of the country, exhibiting at the various conventions of the P. A. of A., and invariably obtaining high awards. He has lately married a beautiful young lady, the daughter of one of Los Angeles' leading business men. He has been styled "the Sarony of California," and seems to justify the cognomen.

ACCORDING to a contemporary the Empress of Austria would at one time never allow her royal features to be committed to paper. Dozens of photographers sought permission, but were al-

ways refused, and it was not until some enterprising gentleman flooded the shops with a hideous caricature of the good-looking lady that her vanity was touched, and she relented.

We understand that Dr. Nansen will take with him on his North Pole expedition a considerable quantity of photographic appliances and materials. Some interesting photographs should be made, if not of the Pole itself, at least of the surrounding country. We think, however, that if the enterprising traveller could manage to construct a camera that could be taken up by a captive balloon and worked by electricity from the ground, that he would be able to secure results otherwise impossible. A similar arrangement was invented by Woodbury many years ago. By means of such an apparatus it might be possible to photograph the country ahead when the progress of man was barred. It might, too, be the means of saving the lives of Nansen and his gallant crew by enabling him to secure representations of the country, and find out the possibility and safety of advancing further.

The Society of Amateur Photographers of Vienna, to whom we are much indebted for repeated courtesies and important reports, has changed its name to that of "The Camera Club." Why so, may we ask? Under the old name the club became celebrated as one of the foremost photographic societies and one of the most efficient. Is it imagined that the new name will enhance its importance? It would almost appear that with the moving to Elizabeth Street into more elegant quarters, a great *tempora mutantur* has taken place in the club. We sincerely trust that the members themselves have not changed with this mutation; but almost fear this to be so when learning from private sources that the excellent journal which has hitherto been the organ of the club is to be replaced by a different publication.

PHILADELPHIA EXHIBITION.

Four floral studies and eight figure studies by Mr. W. J. Anckorn, Arbroath, Scotland, were only partly successful, they showed care and patience, but just missed the final touch. The backgrounds for the flowers were deficient and the figures were stiff and "posed."

Some two dozen prints by Mr. Underwood French, showed pretty much all that is showable of Monaco and Monte Carlo, except the gaming tables; a fair example of photographic reporting, without any picturesque touches.

No 99, Yacht "Mohawk" occupied a prominent position at the end of the large room. It was a carbon enlargement, perhaps 36 x 30, by G. West & Son, of Southsea, England. As this subject was among the three lantern slides for which the makers received a medal, the print may be considered as among the premiated pictures. It was very spirited, and from its large size and prominent position attracted much attention. Among the work of Mr. Caspar W. Millar of the Philadelphia Society, No. 100, "Cloister Garden," 104, "Chalét, near Thoune," and 105, "Mountain Stream," were noticable examples of clean good work, throughout.

Mr. W. B. Post, of the New York Society was represented by some thirty numbers, largely subjects from California and Japan, all showing careful manipulation and good taste, and repaying careful study, which, however, their prevailing small size distinctly discouraged; in the large display, one felt instinctively that the time required to properly examine and appreciate was out of proportion to the Exhibition as a whole. The same may be said of most of the other exhibitors from the New York Society, whose specialty, if we may judge from the results showed, seems to be hand-camera work. Had there been medals offered for this as a distinct class, there is no room to doubt that all would have been captured by the New Yorkers; for such results as these shown by Messrs. Post, Lawrence, Warren, Simpson and Villmar, among others, were of the very first quality, and easily ahead of any others of the kind shown.

To Mr. W. Clement Williams' Marine Studies (159-162) the epithet "glistening" may be applied; they are taken toward the light, across moving waves, and the myriad spots of reflected light were almost painfully forced upon the eye. There is no apparent gain in making these views (20 x 16) direct as compared with moderate enlargements, say from 12 x 10 or 10 x 8. The quotations from Tennyson's "Sunset and Evening Star," used in the catalogue as titles are far from descriptive and therefore seem inappropriate; better call them "marine studies," and let it go at that.

Mr. F. P. Cembrano's "October Morning on the Thames," a beautiful platinotype 8 x 10 print was noteworthy; if recollection serves, the same subject was shown at the Exhibition in New York, two years ago.

Mr. R. H. Lord, of Cambridge, England, was very successful with his six prints, the three premiated ones having found purchasers, as well as one of the others. He seems very fortunate in finding good models for his figure work. "How's

that," (178) is especially noteworthy in this respect; the two old gaffers weighing the merits of the new 'baccy are picturesque themselves and tell the story well.

"TENTATIVE" DEVELOPMENT.

I see that, in a recent issue of The Photographic Times, Professor Charles Ehrmann does me the honor to attribute to me the first application of the word "tentative" to development. I was not the first to use the word as above indicated, but I consider the word a very suitable one, and I have certainly often used it. I remember having heard it first used in connection with development by my friend, Mr. W. B. Bolton, but I cannot say whether he first applied it or not, nor, indeed, is it of much consequence who was the first to use the expression. The actual practice that is indicated by the expression "tentative development" is, however, one of the very greatest importance, indeed, of as great importance as anything in photographic manipulation, and as the question of development can never be over-discussed, I propose to say a few words here on tentative development.

Tentative development is useful only when we are uncertain whether our plates have received the correct or "normal" exposure, or one that is unnecessarily long. I shall here take correct exposure to mean the shortest exposure that will give a perfect negative, or, to avoid the difficulty of defining a perfect negative, shall say the kind of negative that an experienced photographer wishes to get.

It will be seen that I speak of "unnecessarily long" exposure, not of over-exposure. The reason is that recent experiments have proved the possibility of compensating for exposures so enormously greater than "normal" that I consider every photographer, of even moderate experience, using plates that he is accustomed to, ought to be able to be certain that he has given an exposure that is long enough, and that is yet not so long but that a negative such as is desired can be got, by due attention to development. The very definition that has been given of correct exposure implies that, in the case of under-exposure, no good results are to be looked for.

Tentative development may be described as any method of development in which we *keep feeling our way* from the beginning. The alkaline developer lends itself best to this kind of work.

If there is no question of any excessive exposure, it is sufficient to begin by adding only a fraction of the normal quantity of alkali. Thus, whether ammonia, a carbonate, or caustic potash or soda be used, there may be added to the developer at the beginning, only one-quarter or one-fifth of the normal quanity. With this the image will come up very slowly, even if the exposure has been considerably more than the minimum necessary; if the exposure has been correct the image will take a very long time to make its appearance, and in this case the remainder of the alkali may be added a little at a time, or all at once, if the operator is confident, from the way in which the image has appeared under the weak developer, that exposure was normal.

The commonest mistake made in working in this way is to add the whole of the alkali prematurely, thus getting a thin flat image. The image comes up so slowly, even if it has had an exposure considerably more than necessary, that a photographer without much experience is liable to jump to the conclusion that the exposure has been normal, and to pile on the alkali, with the result that development rushes on in a way nearly quite beyond control. To prevent the danger of this, it is my common custom to keep a large measuring glass handy, full of a solution of bromide of ammonium, or potassium, of about 10 grains to the ounce. If the image appears to be rushing up in an alarming way, the plate is taken from the dish, is held over the sink, and is liberally flooded with the bromide solution, which is kept floating over the surface for half a minute or so, to allow it to penetrate the film. This will stop development completely for the time being, but, if the plate be drained, and be returned to the developing dish, density will come up slowly, but detail will scarcely be increased at all. It may be necessary to repeat the flooding process two or three times.

Some years ago Mr. B. J. Edwards introduced a modified form of tentative development that is useful if there is no fear that exposure has been much longer than is necessary. It has the advantage that, if a number of plates are to be developed, less time is taken than by the method just described. A normal developer is applied to the plate at first. If exposure has been normal, development is completed in the usual way. If it has been longer than necessary, the image comes up very quickly and the plate is conveyed, just a little before all detail is visible, to a second dish containing a density-making developer. In fact, if I remember rightly, Mr. Edwards called this second developer an intensifier. It is merely a developer somewhat not over-strong in alkali, very strong in pyro, and with several grains of bromide of ammonium or potassium added to each ounce. In this density comes slowly up, but detail increases very little. If a

large number of plates are being developed, there should be two or three dishes filled with the "intensifying developer," in which case the development in the normal developer may proceed, whilst one or more plates are gaining density in the intensifying developer.

Where it seems likely, or at least possible, that some of the negatives have received many times the normal exposure, it is best to reverse the process, that is to say, to begin development in the "intensifying developer," transferring the plate to the normal developer as may be necessary to bring up detail. There is one objection to this style of work, namely, that if the exposure have been only normal, or a little more, the density is liable to get too great before the necessary detail is out. In overcoming this diffiulty I have found eikonogen to be of the utmost use. Every one who has used this reagent must have recognized its tendency to bring out detail, without giving much density. In working with the "intensifying developer" first, I keep handy a measuring glass of a solution containing about 2 per cent. of eikonogen, and 5 per cent. of crystallized carbonate of soda. Should it appear that density is likely to get too great before detail is sufficient, the plate is flowed with this solution, just as was described for the bromide solution above. This brings up detail very rapidly, but adds little to density. In winter time it is quite necessary to keep the solution at a temperature of from 60 to 70 deg. Fahr.

I have talked above of the enormous power that we have of compensating, in development, for variation in exposure, and I consider that I am perfectly justified in so doing, for recent experiments have shown me that, in the case of ordinary landscape work, it is possible, supposing 1 to be the normal exposure, to give exposures of 40, or in some cases even of 80, and to get negatives similar to those got by the exposure of 1. By similar negatives I mean negatives giving prints such that the most experienced photographer would not be able to tell which print was from the negative that had had an exposure 40 times what the other had had, and this is by variation in the developer only, without resorting to intensification. With intensification it is possible to compensate for still greater differences of exposure.

In these cases, I knew beforehand what exposures the plates had had, and developed accordingly. I do not pretend that, if I were ignorant what exposures the plates had had, I could, by tentative development, have compensated for such enormous variations in exposure as are mentioned here; but I think I am making no over-statement when I say that, were a set of plates with the working of which I was familiar exposed on landscape subjects, some having received normal exposures, others exposures anywhere between normal, and 20 times normal, I could undertake to develop them tentatively, and to produce in all cases such results that no one examining the resulting prints would be able to say which were from negatives that had received normal exposures, which from negatives that had received exposures many times longer than normal.

The experiments I have just been writing of were camera experiments, but they were lead up to, and are being supplemented by, a large number of experiments with a special form of sensitometer that I devised somewhat more than a year ago. In this, plates measuring 12 x 2½ inches, cut from 12 x 10 inch plates are used. The plates are exposed, in transverse strips, directly to an open light. The exposures vary as 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096 and 8192. That is to say that, if the first strip receives a certain quantity of light, the second receives twice of much, the third four times, the fourth 8 times, and so on. Even if the first receives only the minimum amount of light that will produce a developable image, the range of light represented by these figures is very great. I have, however, persuaded myself that it is not more than is often represented on negatives, and is not more than a good plate will register.

After the plate has been exposed, it is cut in two longitudinally, and the two halves are developed with any two developers that it is wished to compare. If it is wished to compare two brands of plates, the strips are cut only 1¼ inch wide, and two are exposed side by side. I do not pretend that the light is uniform, nor that the succession is, in the case of the shorter exposures, exactly as stated, but that is of no consequence, as, whatever irregularity there may be in this respect, the two halves of the strip have exactly the same exposure.

I send you a print from a slip which illustrates very well the enormous control that we have over our results by development. In this case, one-half of the strip was developed with a normal developer containing 2 grains of pyro, and 20 grains of crystallized carbonate of soda per ounce of developer, there being no bromide. In the case of the other half, the pyro was increased three times, and 10 grains of bromide of potassium was added to each ounce of developer. The two halves will be readily distinguished. It will be seen that the strip that has had the least exposure is visible in the half that was developed with

the normal developer, whilst, in the case of that with the restrained developer, the eighth strip is of just about equal strength. It will be seen, farther, that the opacity rises much more rapidly in the case of the half developed with the restrained developer than in that of the other half. Again the last four strips of the half developed with normal developer show reversal and halation. In the case of the other half, density keeps increasing up to the last strip, and there would be farther increase with greater exposure, whilst halation is very slight. I consider that the two halves of this plate represent compensation for exposures varying as at least 100 to 1.

W. K. Burton.

P. S.—Since the above was written, I have pushed my experiments concerning the compensation in development, for unnecessarily long exposures, much farther, and have got over the difficulty of difference in the color of the image. Indeed I incline, at present, to hold the view that it is possible to compensate for indefinitely long exposures. The only limit I have found is human patience, for the longer the exposure becomes, the longer is the time taken for development. I have, however, got the length of compensating for several hundred times the normal exposure.

I hope also to be able to give an expression for the increase of pyro and bromide that is necessary for any increase of exposure. What I mean is this. It being known that a certain quantity of pyro and bromide are suitable to give a good negative with normal exposure, I shall be able to give an algebraical equation whereby it will be possible to find out how much pyro and bromide would be necessary to give a similar, or so far as judgment by the eye goes, an identical negative with any other exposure. I have worked out such an equation for one brand of plates, and have now only to find whether or not it applies to others. So completely does it apply to the one brand of plates that I speak of, that instructing an assistant, who knew nothing of the formula, to go out and expose a series of plates, giving the first the exposure he thought right, and other exposures increasing in the ratio of 2, 4, 8, 16, 32, 64, 128, and giving him the quantities of pyro and bromide to use, worked out by the equation he brought me after a couple of hours' work in the dark-room, 8 negatives that I could not distinguish one from the other.

The quantity of the alkali was not varied, and intensification was not resorted to.

W. K. B.

PHOTOGRAVURE, OR PHOTOGRAPHIC ETCHING ON COPPER.

Steel-Facing.

(*Continued from page 252 and concluded.*)

From an amateur's point of view I am not at all sure that steel-facing is advantageous. A plate without steel-facing will stand about twenty or twenty-five impressions, and these are as many as one usually requires. At any rate, it is sometimes convenient to be able to give as a reason for ceasing further distribution of prints, the wearing out of the plate.

A wooden box is required to hold the steel-facing solution; a box for plates 12 x 10 should measure 24 x 12 x 20 deep. Brass rods run the whole length of the bath, and from them are suspended the copperplate and a plate of iron measuring 22 x 18, and a quarter of an inch thick, face to face.

The solution in the trough is composed of one pound of sal ammoniac and one gallon of water.

The electricity is supplied by a battery consisting of a stick of carbon in a porous cell, this cell being surrounded with a plate of zinc, the whole being contained in an earthenware jar.

In the outer cell is sulphuric acid of the strength of 1 pint to 10 of water, and in the inner cell is bichromate of potash, 3 ounces to 20 of water. The rod from which the iron plate is suspended is connected with the carbon anode, that supporting the copper, with the cathode (zinc). The current is allowed to pass through the trough for two days before it is ready for work.

The plate must be cleaned very carefully before steel-facing. First clean with turpentine and a nail-brush, then with benzole, and rinse under the tap ; it is now put into a strong solution of caustic potash, 1 pound to 10 pints of water and left for half-an-hour. The plate is further rubbed and cleaned alternately with nitric acid, one to twenty, and with whiting and water, and these operations are repeated until the plate is chemically clean.

The plate is cleaned at the back, and a piece of copper wire is soldered on, and by this the plate is attached to one of the brass rods opposite the plate of iron. The plate is moved up and down in the solution and examined occasionally. A sufficiently thick coating will be obtained in about half-an-hour.

Herbert Denison.

ALTITUDE AND EXPOSURE.

Bunsen discovered that the actinicity of light increased proportionately with the increase of altitude above sea-level, of the place where the light-sensitive plate is exposed.

Vogel, fully aware of Bunsen's observations, but accrediting the increase of actinic power to a limited extent only, over-exposed all his plates, or at least the great majority of them that were exposed at high altitudes when on his trip across the continent at the occasion of the opening of the North Pacific Railroad. Students of the Chautauqua School, residents of Colorado, have met with repeated difficulties for the same reason, and an exposure meter has proved in their hands an entire failure owing to the fact that the inventor has, in his calculation, entirely omitted one factor—*altitude.*

How apparent this increase of actinic power may become is shown by the fact that on the Chautauqua Assembly grounds, but 1,500 feet above the level of the Atlantic ocean, a Carbutt 27 plate exposed with a Waterbury B lens, stop *f*/35, requires but two seconds' exposure, while in New York, all other conditions being identical, three seconds would be required. What then must be the difference at the height of, say, 8,000 or 10,000 feet.

Captain Abney has recently published in the English photographic journals certain observations on the same subject, and gives by barometrical measurement, the relative proportions between altitude and exposure. Jackson of Denver, Savage of Salt Lake City, and Fisk of Yosemite, aware of this difference, expose accordingly and obtain marvelously fine results, but there are others, and many of them, who invariably over-expose.

Light is light whether artificial or that of the sun, its planet reflection, or that of the moon, the satellite of one of its planets, and to us photographers it is always the same force modified by circumstances beyond our control, and becoming either weaker or more energetic. Among these modifications are, as already stated, the increase or decrease in altitude in certain localities and rarified atmosphere, or the presence or absence of moisture. On more than one occasion have I admired photographs taken by the light of the moon in highly situated countries, and, as reported, in an almost incredibly short time of exposure. Burton, E. von Gotthardt and Dr. Eder have come to the conclusion that a moonlight exposure requires in round numbers about 300,000 times longer than in bright sunlight. But those photographs we have seen coming from Colorado baffle description, and are calculated to entirely upset all the theories of these acknowledged savants, unless we ascribe the difference of exposure required to the influence of altitude and the state of the atmosphere in its purest form. By these the time is reduced to a wonderful extent.

I have recently seen a picture of this description of unequalled beauty. It represents Pike's Peak with the garden of the gods in the foreground. It is taken by the light of a full moon with one hour's exposure, a Waterbury hand-camera stop *f*/20 and a Seed No. 23 plate being used. An equally good picture it would be impossible to get under similar conditions at the Chautauqua Assembly grounds, under an exposure of two hours.

Mr. Geo. G. Cartwell, of Colorado Springs, has made the picture referred to and although many others have produced equally good work under the same conditions much credit is due to him. There is one thing, however, in which I cannot possibly coincide with him—namely, the nature of certain lines in the sky of his pictures which he ascribes to the photographic action of stars travelling across during the exposure. These lines do not indicate the path of planets, they are too near to each other to be so, and not regular enough in curvature. Close investigations of many so-called photo-astronomical pictures have proved them to be delusive and I am sorry to say Mr. Cartwell's otherwise extraordinary picture must be relegated to the same category.

Chas. Ehrmann.

Notes and News.

Printing-out Opals are all the rage in England now.

To preserve pencil marks coat them over with a collodion containing two per cent. of stearine.

F. H. Bade announces his return to the management of the photographic business of H. Drew & Bros., Jacksonville, Fla.

Amateur Photography.—"Will no doubt cover a wide field of usefulness among the daily increasing number of amateur photographers."—*The American Journal of Photography.*

Mr. Albert Taylor, chief of the Brazilian Eclipse Expedition, has cabled that the plates exposed in the various instruments used have all been developed with highly satisfactory results.

Messrs. Werner & Son, of Dublin, have just made what they think is the largest negative ever yet taken direct from life (with a doublet lens). The size is 64 x 38 inches. They would like to know if they are justified in claiming it as the largest. Can any of our readers beat this?

"Helmold's Hardening Mixture for negatives and for gelatine papers is an article that should be found in every gallery, as, when it is used, the prints are made indestructible as regards moisture, and negatives may be dried by heat, the same as the old wet plate, and a proof taken in a few minutes," thus writes the *St. Louis and Canadian Photographer*.

The Electro-Light Engraving Company has issued No. 1 of Vol. I. of an illustrated monthly periodical devoted to photo-engraving in all its branches.

The initial number has for its frontispiece the portrait of President Cleveland, which embellished the columns of THE PHOTOGRAPHIC TIMES several weeks ago.

One Thousand Dollars in Gold and a handsome diamond medal is offered by the Murdock-Wunderlich Aristotype Paper Company for the best photograph made on Murdock aristotype paper exhibited at the Chicago Convention of the P. A. of A.

Who Will Wear It?—A handsome diamond medal made by J. B. Hudson, the leading Minneapolis jeweler, is offered by the Murdock-Aristotype Paper Manufacturing Company for the finest single print from any size portrait negative made on their paper. The exhibits are to be made during the Photographer's Convention at Chicago, July 18th, 19th and 20th. The manufacturers are crowded with orders for this new process paper, which has received many testimonials from those who have used it.

The Illustrated Catalogue of the Second Annual Exhibition of the Brooklyn Academy of Photography is an attractive souvenir. It contains as a frontispiece a photogravure of a marine subject, and includes several other very good half-tone reproductions.

B. W. Kilburn, the stereoscopic photographer at the World's Fair, writes that, though the weather on the opening day was not as favorable as was hoped for, still he and Mr. Arnold succeeded in getting some good instantaneous pictures of the ceremonies. Their exposures were all made from a large truck, favorably located; but in spite of the fact that this truck weighed at least a ton, they were moved about hither and thither by the surging crowd. "It was perfectly good natured," writes Mr. Kilburn, "and there was no rowdyism, but the crowd was determined to see what was going on, and the jam was simply awful."

The fine weather which we have been having of late has given photographers in the vicinity of New York an excellent opportunity to photograph the war vessels anchored in the harbor. Excursion steamers have made regular trips several times each day through the fleet, so that those who did not succeed, on account of the bad weather, on the occasion of the great parade and review, have had afforded even a better opportunity of photographing the individual war vessels.

The Caravels of Columbus have, of course, been the main objects of attention by photographers. They have been photographed from every conceivable position, singly and together, and many fine negatives are the result. THE PHOTOGRAPHIC TIMES will shortly present its readers with the best obtainable picture of Columbus' flag-ship, "The Santa Maria."

Mr. J. Scott Hartley, the sculptor who made the Daguerre Memorial, which now stands in the Smithsonian Institution, at Washington, modelled the statue of Ericsson, which was unveiled at Battery Park, New York City, Wednesday morning, as the International Fleet of cruisers swept up the North River from the Lower Bay.

It is a dignified figure in bronze on a granite pedestal, which is ornamented with bronze tablets in low relief, representing the various inventions of the great Swede. A photograph of this monument will adorn an early number of this magazine.

According to Liesegang the following is an effective method of detaching negative films from the glass: Immerse the negative in a weak solution of sulphuric, hydrochloric or citric acid. After a few minutes it is (without washing) placed in a concentrated solution of sodium carbonate. Carbonic acid gas is thus formed between the glass and the film and the latter can be easily detached. After this the film is bathed in alcohol, when it will dry quickly and perfectly flat.

An Improvement in the Waterbury Detective.—To satisfy a long expressed desire The Scovill & Adams Company have attached a compartment to the 4 x 5 Waterbury Detective camera capable of holding six double plateholders, thus making this popular and effective apparatus quite complete. There is no advance in price, the list price being $25 for camera and two double plateholders.

The 5 x 7 of the same series has been furnished with a new wide-angle lens, an excellent and rapid working objective.

An Old Advertisement.—The Anniversary number of the New York *World*, dated May 7, 1893, contains a *facsimile* of the issue of June 14, 1860, on the first page of which we notice the following advertisement:

TO THE TRADE.

SCOVILL MANUFACTURING COMPANY,

Manufacturers of

Sheet and Plated Brass, German Silver, Silver-Plated Metal, Brass Butt Hinges, Gilt and Plated Buttons, Daguerreotype Cases, Mattings and Preservers.

Importers and Dealers in every direction of Daguerreotype and Photographic Materials.

Nos. 4 Beekman St. and 36 Park Row New York.

[Adjoining *The World* Office.]

The Leading Journal.—"THE PHOTOGRAPHIC TIMES still keeps up its reputation as the leading weekly journal of photography. * * * The amount and excellence of the important information given is remarkable at the price, $5.00 per year." Thus writes the *York Daily* of May 8, 1893.

The Manhattan Optical Co. sends us their catalogue of lenses, which contains some interesting "facts about lenses," with reading. The book can be obtained by addressing the Company, Ross Building, corner Bank and Greenwich Streets, N. Y.

"Simplicity and Clearness."—"This little work which is a *rachauffé* of articles contributed by the author to various journals, will doubtless prove of value to those commencing photography. It is characterized by a simplicity and clearness of knowledge decidedly commendable."—*The Amateur Photographer, London.*

"Pleasant Popular Reading."—"This little volume has not been written for the scientific or practical photographer, but for the class which desires to have a popular knowledge of an art of which every person is now supposed to know something. * * * It forms pleasant, popular reading"—*The British Journal of Photography.*

The simplicity of the "Blue Print" process has caused it to become a very popular one with amateurs. The Philadelphia Blue Print Co. of 41 North Seventh Street, Philadelphia, Pa., send us a sample print upon their French Satin Jr. paper, and for depth and brilliancy we can confidently recommend it. To meet the objection that many have to this process of the blue color always obtained, the company supply Millen's toning solution, by means of which a wider range of tones can be secured.

Photographic Societies.

PHOTOGRAPHIC SOCIETY OF JAPAN.

A REGULAR meeting of the above mentioned Society was held at the rooms of the Geographical Society [Chigaku-Kiokai] Nishikonya-cho, Kiobashi, Tokyo, beginning at 5 P.M., on Friday the 14th, April, Mr. Edmund R. Holmes in the chair.

The following gentlemen were unanimously elected members of the Society: Messrs. W. Silver Hall, N. Kasuga, S. Kikkawa, W. B. Mason, M. Naito, K. Narahara, and K. Tatsuke.

Mr. T. Kiyokawa presented samples of blue printing paper, of his own manufacture, to the Society, and these were distributed amongst members for trial.

Mr. B. Munster showed farther examples of the work of J. Carpenter's Opera-Glass camera. These were very beautiful, and were greatly admired.

Mr. S. Nonogaki sent a couple of pin-hole photographs. Mr. Nonogaki was not present, but it was understood from a letter that he had sent, that he had made the pin-hole plates himself, having read the communication to the Society on the subject by Mr. J. Favre-Brandt. The definition of the photographs shown was so good that it was hardly possible to believe that they had not been taken by a lens, but in looking at them very carefully the characteristic pin-hole "softness" could be seen.

Mr. W. K. Burton and K. Arito showed a sensitometer they had been using in an investigation with regard to the power of compensating, in development, for variation in exposure. Long strips cut off from dry plates were exposed in this sensitometer, to direct light, were afterward longitudinally cut in two, and the two halves were shown, proving the power of compensating for exposures varying as several hundred to one.

A set of photographs all of the same landscape was shown. The exposures of the negatives, all on the same kind of plate, had been 1½, 3, 6, 12, 24, 48, 96, and 192 seconds. Members were asked if they could distinguish the prints from the negatives that had had the longer exposures from those that had had the shorter exposures. They were utterly unable to do so.

The Brooklyn Academy of Photography have just held their Second Annual Prize exhibit in their well-appointed rooms, at the corner of Clinton and Montague Streets. Altogether above three hundred prints are shown, including nearly all the various printing processes, now adopted. Among the pictures especially deserving of mention were those of Mr. La Manna. This gentlemen exhibited some twenty or more views of a diversified character, including pictures on the Isle of Wight, Paris, Centennial views, and peasant studies in Breton. Mr. A. S. Barney exhibited some interesting views of Tarrytown, Mauch Chunk, on the Bronx river, one or two pictures full of life of the New York docks. Dr. John Merritt, the President, showed two prints full of admirable points. Mr. E. A. Caner's work was distinguished by two fine bromide enlargements, and some flash-light portraits of the characters in "Carmen." Mr. Stark W. Lewis' rural scenes of the Berkshires and shore views cannot also be passed by without mention. With regard to portraiture, a branch of photography in which few amateurs succeed, we must pause over the works of Messrs. Vaughan and Clarence Trowbridge, whose portrait work did them infinite credit and showed much artistic feeling in the posing. Mr. Henry B. Vanderveer, of California, and Mr. J. B. Morrison's picture scenes, all showed considerable taste in selection and arrangement. Mr. W. T. Wintringham was successful in his pictures of the Crescent, and the marine and field grounds, and Mr. Dana Reed's views excited much attention on account of their local interest, being chiefly views of Brooklyn suburbs.

A Lantern Exhibition of views made during a summer trip in Ireland was given by Mr. W. W. Byington, President of the Albany Club, at the rooms of the Society of Amateur Photographers of New York on May 9th last. The lecturer spoke of Ireland as an unknown country to Americans. He thought if it were better known we should be much more favorable to it.

Ireland abounds in riches for a photographer. There is hardly a spot without some old picturesque ruin of a castle, monastery, or round tower. Among the slides that mostly interested his audience were "A Picture of Washerwoman's Row," the celebrated Blarney Castle and Blarney Stone, the home of Sir Walter Raleigh, and the house where William Penn slept his last sleep before leaving Ireland for the shores of America.

With regard to the pictures themselves, we much regret to say that we had the misfortune to be seated behind several young ladies wearing the very latest style in hats, which, save for a piece of cloud or the top of a tree now and then, completely obliterated the views, effectually preventing us from forming any opinion upon them.

The Editorial Table.

Jahrbuch fur Photographie und Reproductionstechnik, 1893. Edited by Dr. Joseph Maria Eder. Published by Wilhelm Knapp, Halle a/S.

This bulky little volume is always welcome, containing as it does such a store of instructive and useful matter. The volume for 1893 is by no means behind its predecessors either in the quality of the articles or the illustrations which are such an important feature in this work, and forms as complete a summary of photographic progress during the past twelve months as we should imagine it possible to get together.

The subject of photo-mechanical printing processes is now one of considerable interest, and articles will be found upon this subject by such competent men as Albert, Angerer, Volkmer and others. The subject of optics is treated upon by such writers as Steinheil, Miethe, Chapman Jones, Rudolph, and others. Valenta describes his process of developing lightly-printed gelatino and collodio-chloride papers. Schumann, Kayser and Eugen v. Gothard treat of spectro-photography. Dr. Smith illustrates a novel plate-coating machine, and Dr. Miethe a method of telegraphing photographic pictures. Vogel, Zenker, and Vidal treat of heliochromy, summarizing the extent of researches that have been made in this direction.

Among the thirty or forty full-page illustrations that are given at the end are a fine sample of Albertchromy, a number of good specimens of the lichtdruck (phototype) process, and various photo-engraving processes. Among the pictures of interest are the first subterranean photographs made by Nadar as far back as 1861. They represent the Paris Sewers and the Catacombs. Lastly we have some specimens of telephotography, showing the capabilities of this new lens.

To sum up, we can only say that we strongly recommend all those who have a knowledge of the German language to peruse this little work, for it would be impossible for them not to find a considerable amount of interesting and instructive matter.

Mr. Rolland Hennessy, formerly with *Outing*, and for some time editor of *Music and Drama*, has recently composed a song entitled "Sleep, Baby, Sleep," which is published by Nocton Co., at 67 Fifth Avenue. "Sleep, Baby, Sleep," is being sung with remarkable success by the sweet boy singer, Cyril Tyler.

"**Every Photographer's** studio is wonderfully deficient without this weekly chronicle of photographic news and improvements," says the *Fremont Journal*, (Ohio,) in regard to PHOTOGRAPHIC TIMES.

Record of Photographic Patents.

496,976. Photograph Album. Rudolph M. Hunter, Philadelphia, Pa.

496,512. Camera Shutter. Alexander Entwisth, Bristol, R. I.

HER STRONG POINT.

"I'll never patronize that mean photographer again."

"Why not."

"He made me some photographs and you can't see my dimples with a microscope even!"

Queries and Answers.

70 F. W., Golden Eagle, Ills.—1. Will you please tell me through the Q. & A. column of THE TIMES, if the compound mentioned on page 17 of "Bromide Paper and How to Use It," as "potassium ferric oxalate," is put on sale; if so, by whom, and the price for small quantity?

2. What kind of a vessel is required in which to evaporate and *fuse* an old albumen silver bath?

3. What are the keeping qualities of the new "Acme Emulsion Paper," after being silvered, as compared with albumen paper?

70 *Answer.*—1. Potassium ferric oxalate is a double salt, crystallizing with a beautiful emerald green color; it consists of potassium oxalate and ferric oxalate. The green crystals depositing in old ferrous oxalate developer are potassium ferric oxalate. The substance is now extensively used, and can be had in the store of The Scovill & Adams Co, at 25 cents per ounce.

2. The evaporating dish of the "Berlin" Porcelain Manufactory. Agate ware will not do for the purpose, as the silver when fusing dissolves the enamel.

3. About the same as albumen paper.

71 MACD.—How can albumen prints be mounted upon drawing paper or Steinbach roll without cockling?

71 *Answer.*—Gelatine solution with a large portion of alcohol in it will answer, or virgin India-rubber dissolved in pure benzole, in which case print and mount must be pasted. The Scovill & Adams Co. sell a compound under the name of "Non-Cockle." Try it. The cement known in New York under the name of Stratena has done us good service. It is, as far as we know, an alcoholic solution of mastic, mixed with an aqueous solution of isinglass, fish isinglass.

72 L. C. S., Lincoln, Ill.—I have a valuable daguerreotype which I wish to copy. It is over forty years old and age has stained it in a spot or two, and also some near the edges. How can I remove the stains and not injure the picture?

72 *Answer.*—Take the picture from frame, preserver and glass, soak it in water to remove all adhesive paper, wash again and pour over it a 20 per cent. solution of cyanide of potassium, which will gradually dissolve all stain and make the daguerreotype as bright and fresh as on the day it was made. When clear wash the picture carefully and dry by slight heat. To take hold of one of its corners with a pair of pincers and hold over an alcohol lamp is the usual way of doing this.

When exposed to a strong heat the gilding, and with it the picture, may crack on the silvered plate. Ungilded daguerreotypes require a much weaker cyanide solution. One of greater strength may dissolve the whole picture deposit.

Never apply fingers, brush, rag or other wiping material to the face of a daguerreotype, to do so will invariably ruin it. Remember that the cyanide of potassium is a strong poison.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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SOME TESTIMONIALS FROM "THE WORLD'S FAIR PHOTOGRAPHER.

"**The 'Henry Clay'** is just right—perfection," writes B. W. Kilburn, the World's Fair Photographer.

"**The Plate Holders** (Henry Clay) arrived yesterday, and are A1."—B. W. KILBURN.

"**The Swift lenses** are in daily use, and I do not see how I could do without them."—B. W. KILBURN.

"**I have put the Swift lenses through hard,** and they please me very much. They are another power that I gladly welcome. * * * I would not part with them for double their cost," writes Mr. B. W. Kilburn, World's Fair, Chicago, Ill.

Swift Lenses.—"I enclose two proofs made instantaneously with the Swift lenses. They are most perfect negatives, all that can be desired. I have made lots of interiors with them, and find the lenses just as perfect for that work, and as good, and perhaps better than any lens I have got. I am pleased with them, you may be sure."—B. W. KILBURN.

Extract from a letter from Mr. B. W. Kilburn, who has the exclusive privilege of making stereoscopic views at the World's Columbian Exposition:

LITTLETON, N. H., April 7, 1893.

G. CRAMER, DRY-PLATE WORKS, ST. LOUIS, MO.

Gentlemen: I had fine success using your plates and it is solid comfort to have a stock of such plates on hand; it gives courage, and you know to a nicety what is possible.

I did not lose ONE plate in TWO HUNDRED AND NINETY-TWO exposures, all Cramers, from ANY FAULT IN THE PLATE, while in Chicago this last time.

Yours very truly, B. W. KILBURN.

Dr. Andresen's Amidol on Top!—An arrangement has been made by the importers of the rival Amidols by which the importers of the Hauff Amidol agree not to import or sell any more of that article in this country. Dr. Andresen's genuine article will hereafter be the only Amidol imported in this country. We are the sole agents for Dr. Andresen's Amidol in this country. The prices for this energetic developer are as follows:

In 1 ounce cans, ...	$0.75
In ¼ lb. "	2.75
In ½ lb. "	5.25
In 1 lb. "	10.00
Amidol Cartridges (making 16 ounces of developer):	
In packages of 5	$1.00
" " 10	2.00

If you have not yet tried this developer, send to us for a sample, with full directions for its use.

THE SCOVILL & ADAMS CO.,
423 Broome St., New York City.

Sole Agents for Amidol in the United States. For sale by all dealers.

TRY DR. ANDRESEN'S AMIDO DEVELOPER.

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WANTED.—A good Safety Bicycle; pneumatic tire preferred. Address, with price, "H," care of THE PHOTOGRAPHIC TIMES Office.

FOR SALE.—One Stendicke Universal Lens, fitted with Prosch Duplex Shutter, with pneumatic bulb and tube; eight-inch back focus. Cost $39, will sell for $25. Address "STENDICKE," care THE PHOTOGRAPHIC TIMES Office.

WANTED.—Views of the Naval Parade—land and water—Hampton and New York; will pay cash, or exchange. Address E. D. SHAW, 641 Arch St., Philadelphia, Pa.

A SELECTED PORTRAIT LENS, made by Dallmeyer, for sale. This lens has done some of the best known work in this country. It was a premium lens, originally costing over two hundred dollars. It can be seen at the warerooms of The Scovill & Adams Co. It goes to the highest bidder. Call for or address "PREMIUM LENS," 423 Broome St., New York City.

ANDRESEN'S PURE SULPHITE, for Amido, Para-amido-phenol, Rodinal, Eikonogen, or Pyro. Use only Andresen's *Pure* Sulphite of Soda. (See advertisement.)

"AMATEUR PHOTOGRAPHY," by W. I. Lincoln Adams, is "A Practical Guide for the Beginner." Illustrated. Paper covers, 50 cents; cloth bound, $1.

WANTED.—May 4, 1888, September 12, April 18, and July 4, 1890, PHOTOGRAPHIC TIMES. Will pay 15 cents per copy for them. COMPLETE FILE,
Care THE PHOTOGRAPHIC TIMES.

FOR SALE.—The Photographic Stock business, formerly owned by E. J. Partridge. This is a good business in a good locality for any one wishing to establish themselves permanently. For full particulars apply to
GEO. M. WEISTER, Administrator,
269 Morrison St., Portland, Oregon.

FOR SALE.—A No. 5 Folding Kodak, used only a few times; roll-holder or glass plates; Barker Shutter, also Prosch Triplex Shutter, interchangeable; twelve plate carriers, quadruple level. $60. M. REDMOND,
16 West 16th St., New York City.

PHOTOGRAPHERS who haven't time to make their own Platinotypes should carefully pack their negatives and send them (six 5x7 negatives properly packed in cotton can be mailed) by express. Send for lists.
THE PLATINOTYPE CO.,
1624 Chestnut St., Philadelphia.

WANTED TO PURCHASE.—A Columbia Safety Bicycle, or any good Safety in good order. Address GARDINER, care THE PHOTOGRAPHIC TIMES.

PHOTOGRAPHIC BROKERAGE.—Established especially to furnish carefully selected outfits of any make or grade to those living at a distance. Address
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THE SCOVILL & ADAMS CO.

PHOTOGRAPHERS, ATTENTION!—For sale, my old established, well equipped, and business-paying studio in Portland, Me.; best location, low rent, favorable lease; 60,000 good paying negatives; population nearly 100,000; business good for $5,000 profit yearly; nearly that last year and not half worked. I've too many studios and want to sell a few. This is a chance in ten thousand for a couple of bright young men. Will sell very low. G. WALDON SMITH,
145 Tremont St., Boston, Mass.

GRIT VARNISH.—The best retouching medium in the market; 6-ounce bottle, 40 cts.
THE SCOVILL & ADAMS CO

"The Chemistry of Photography" is an especially useful book, of 420 pages, by W. Jerome Harrison."—*Photographic Review.*

WANTED.—A copy of "The American Annual of Photography and Photographic Times Almanac" for 1889. Address W. F. DURNALL, No. 462 So. 24th Ave., Omaha, Neb.

TRY IT!—"The Developer of the Future," Dr. Andresen's Amido. In solution, ready for use, 50 cents per 8-ounce bottle, with full directions. Dr. Andresen's Pure Amido in 1-ounce bottles, 75 cents per bottle.
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PERFECTED BRADFISCH Aristotype Paper leads the world! It does not stick, nor does the surface of the print rub off.

PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never lose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
C. M. DARLING, 122 West 36th St.

LANGILL, 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

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A full line of everything appertaining to the photographic profession constantly on hand.
R. H. MORAN,
396 Broome St., New York.

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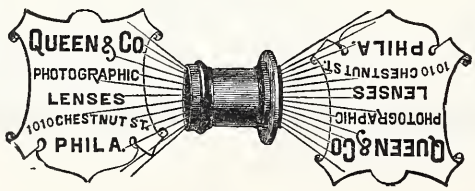
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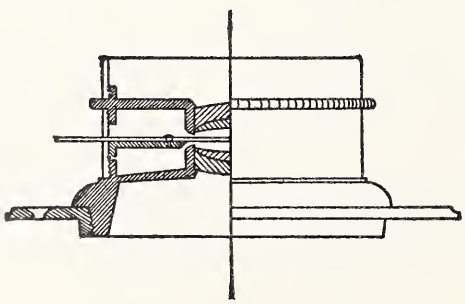
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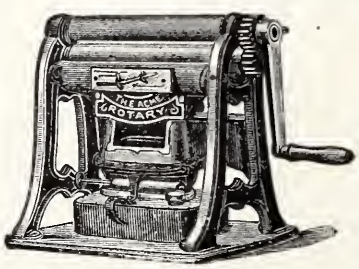
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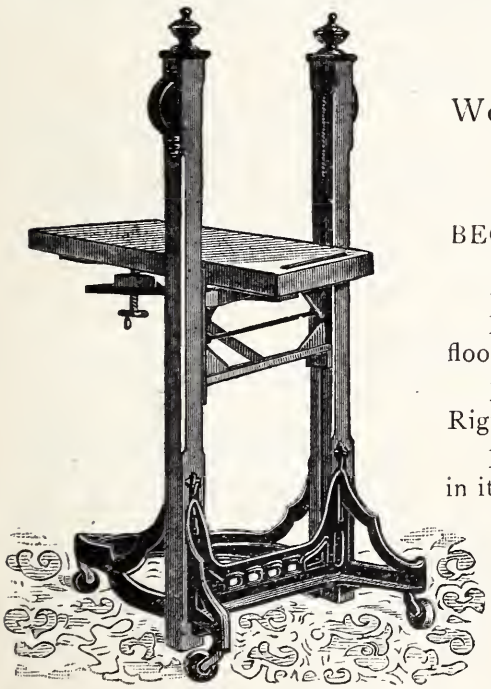
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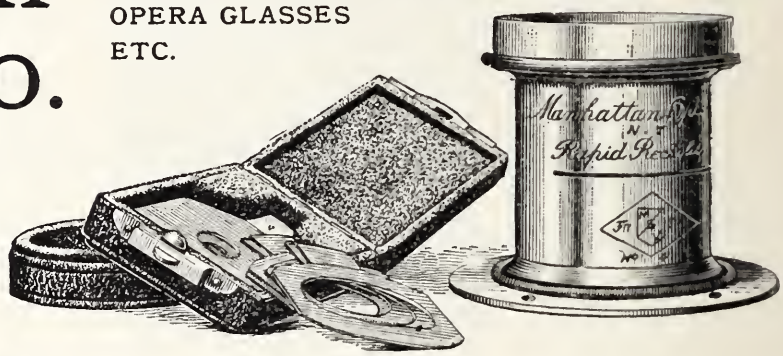
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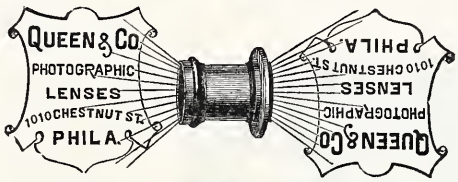
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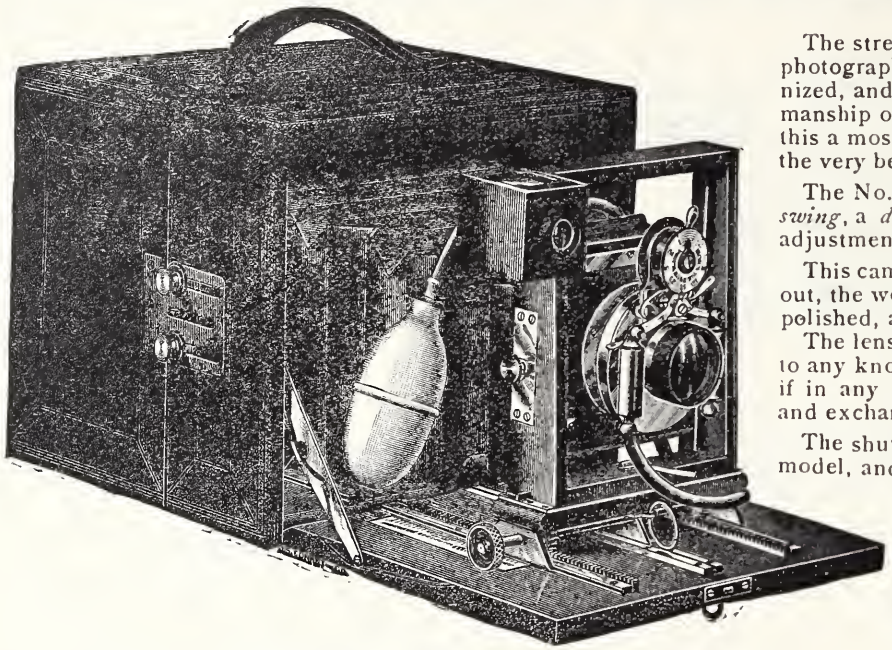
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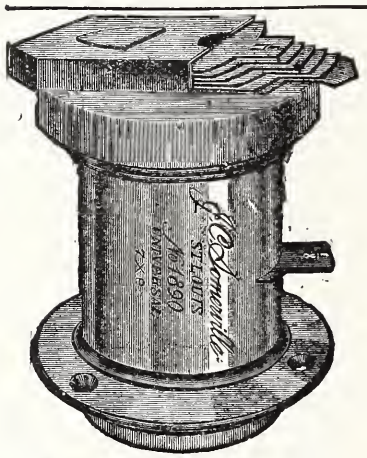
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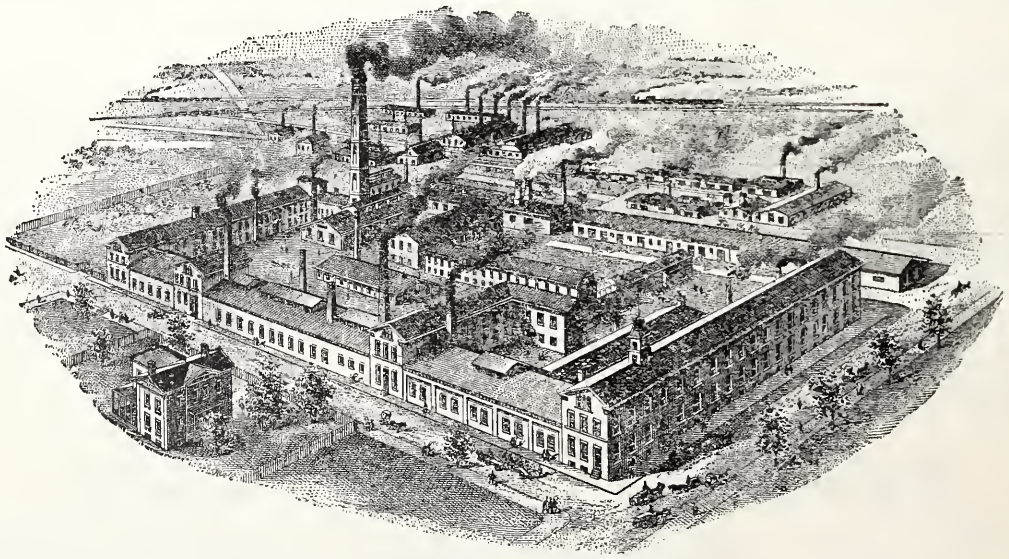
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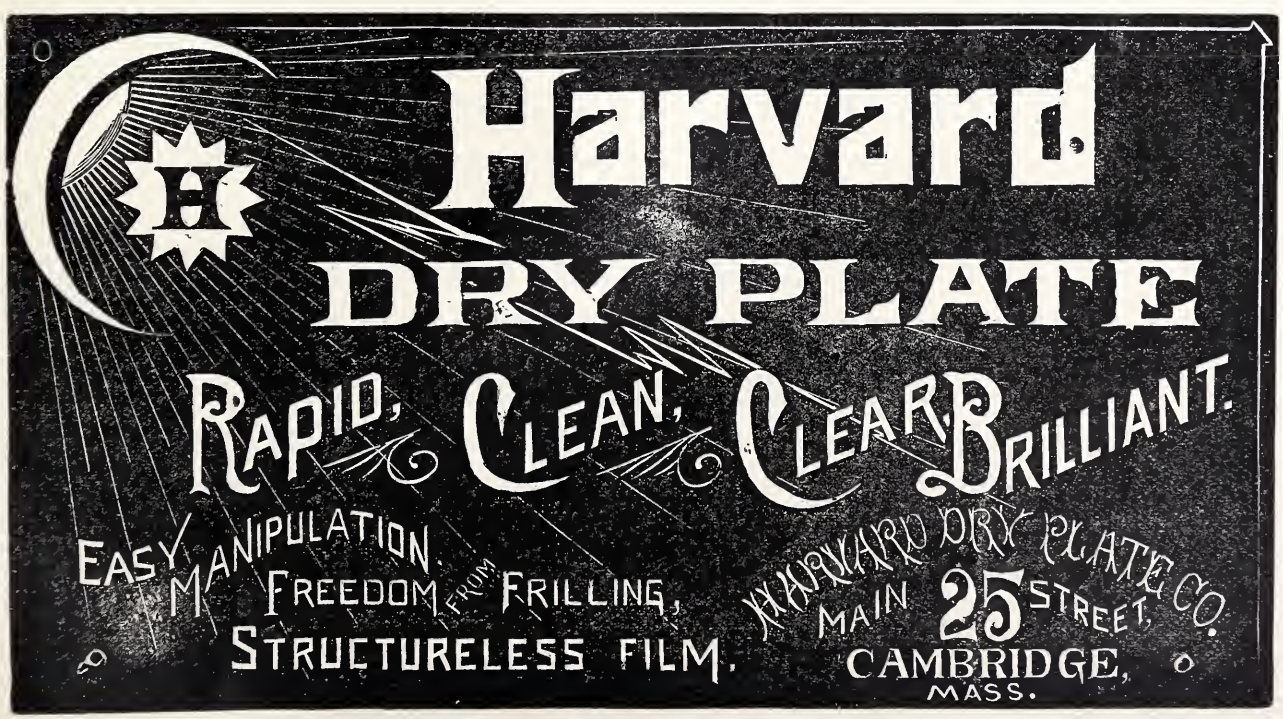
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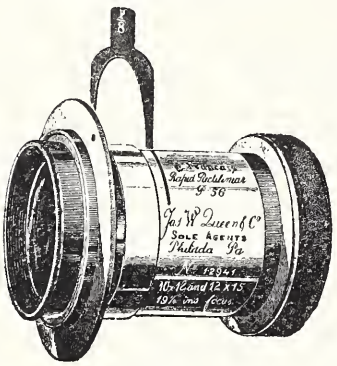
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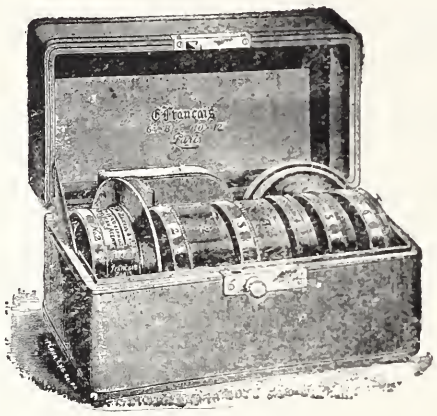
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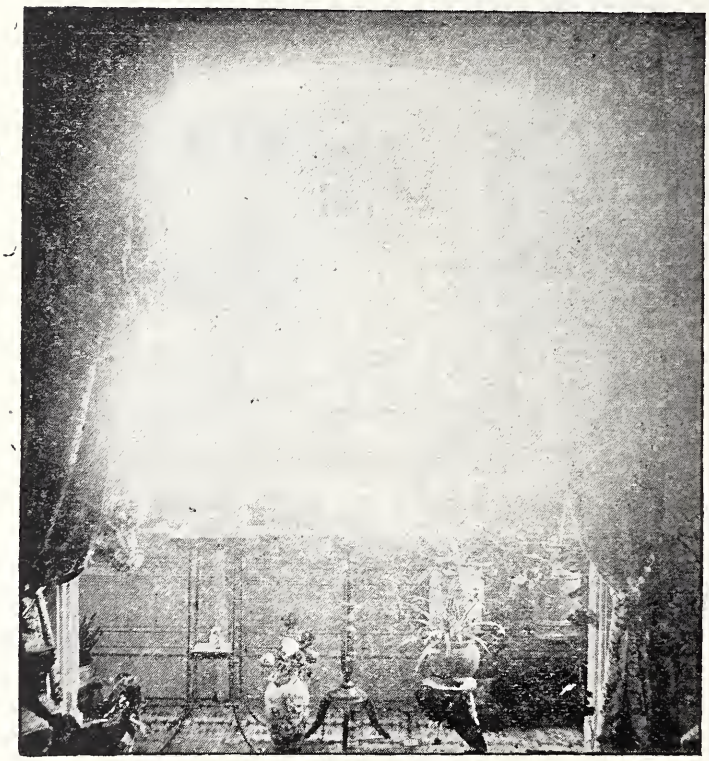
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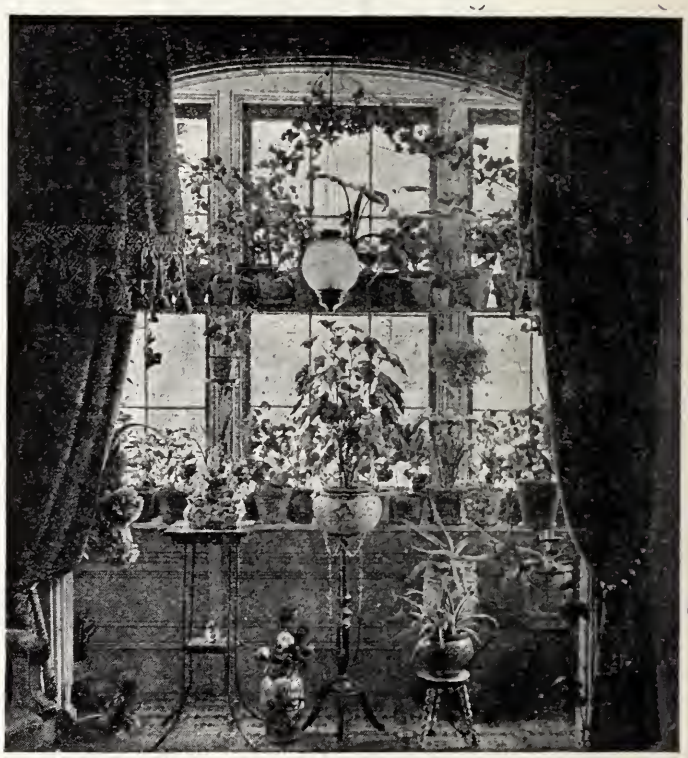
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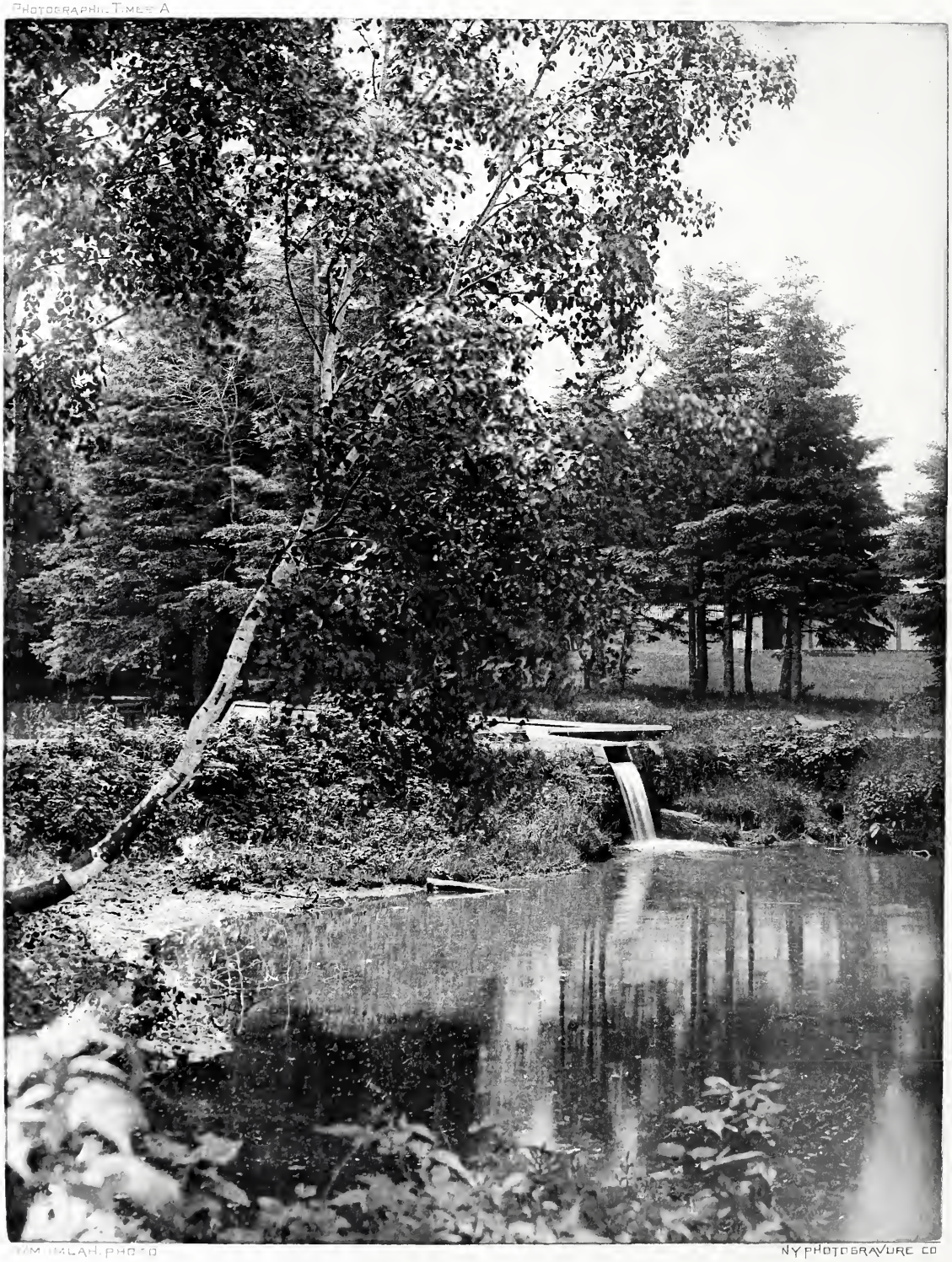
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PHOTOGRAPHIC TIMES A



WM. IMLAH, PHOTO

NY PHOTOGRAVURE CO

A Canadian Scene.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JUNE 9, 1893. No. 612.

A CANADIAN SCENE.

THE frontispiece of our magazine this week is from a negative by Capt. William Imlah, of the Canadian Regular Army, of whom we have had occasion to speak frequently in the past, on account of the excellent photographs, both technically and artistically speaking, which he has favored us with.

The present picture is "A bit of Nature," as the captain writes, "slightly assisted by men, in the midst of the military camp, close to the rifle range." "Your photogravure," he continues, "quite throws my poor silver prints of the negative in the shade. I had no idea the negative would make so handsome a picture. Your artist is to be congratulated on his skill." Our artist is Capt. William Imlah, and we heartily congratulate him. It is needless to say that the photogravure is an exact reproduction of the gallant captain's excellent negative.

PRINTING ON PLAIN SILVER PAPER.

HARDLY had we mastered the preliminary difficulties and learned how to make good silver prints of neutral black tones on Ganson frères or on Saxe paper, when the introduction of albumen paper suddenly thrust aside the results of years of labor.

Albumen paper at once became very popular and is still king in the realm of photographic printing processes, becoming principally so since the adoption of Sutton's so-called alkaline toning bath, the first method of toning having been a combined bath, consisting of hypo solution with chloride of silver and *sel d'or*.

When retouched, and aquarelle photographs were still in vogue, many plain silver prints were made, but with the abandonment of such finished work, plain silver printing was entirely forgotten, and only a few years ago a contributor to this magazine counted it among the lost arts, and justly so, for neither amateur nor professional made as good plain prints as, say, ten or twelve years ago.

Through Pizzighelli's platinum and the Eastman bromide paper, the attention of the public was redirected to matt surface printing, and while we admit them to be far more artistic and chaste than the high glossy aristos, the latter have the advantage of being better adapted for small work, where details and middle-tints are of more importance than broad light and shadow effects.

A good aristo print flatters the amateur. What he has striven to obtain by correct exposure, with small stop and accurate development, is better reproduced upon aristo than upon developable papers. Through the agency of over or under exposure, and incorrect development, sharpness and brilliancy are frequently impaired or entirely lost, or the picture sinks within the mass of the paper, and the print becomes dull and monotonous.

With all due regards to platinum, bromide or kallitype papers, printing-out papers upon matt surface are much to be preferred. If properly prepared, the picture remains upon the surface only, and what is most important, the progress of printing can be controlled and the desired depth of tone is at the will of the operator. Matt surface printed-out photographs again become popular, and justly so, and among them all there is probably none that can compete with the Mignon, manufactured by Emil Bühler of Manheim.*

Prints upon this paper are beautiful, the highest perfection of all photographic printing.

Other manufacturers of similar papers, right good, they may be, cannot however, compete with the Mignon.

This being an emulsion paper, we merely mention it *en passant*. Our purpose is to contribute a share in the revival of old processes, which are reliable and capable to give good results. To do so we

*See American Annual of Photography for 1893, page 126.

need to turn back a few pages in the history of Photography. The Rev. T. F. Hardwich, as early as 1856, proposed a method which has been retained by some of the older photographers invariably with excellent success.

The process is decribed as follows:

Take

Pure citric acid	100 grains
Chloride of ammonium	100 "
Gelatine, previously swelled in cold water	10 "
Water	10 "

The gelatine is used to retain the layer of sensitive salt at the surface of the paper, but it does not affect the tint.

Dissolve the citric acid in a small portion of water, and neutralize with carbonate of soda; the quantity (of common washing soda) required for 100 grains of citric acid is 228 grains; add the alkali cautiously, with continual stirring, until the last portions produce no further effervescence, and the immersed litmus paper, previously reddened by the acid, begins to change to blue.

The best paper for this method is the "Papier Saxe," one side of which is to be floated for two minutes upon this salting bath. Owing to the presence of gelatine it is preferable to heat it slightly.

Render sensitive upon a neutral solution of nitrate of silver, 50 grains to the ounce of water, allowing three minutes' contact.

Based upon the presence of citrate of silver in the sensitizer, any variety of warmer tones, almost to a positive red, can be obtained with it. This paper is, therefore, especially commendable to the use of the artist.

Another, an old and orthodox method, originated with A. Whipple, one of the fathers of American photography, which we have practiced since the earliest times, invariably with good results.

A.—Make a solution of 300 grains of chloride of ammonium in one gallon of water, and soak the paper in it for a minute or two, being careful to avoid air bubbles forming and settling upon the surface. Then hang up and dry.

B.—Dissolve one and a half ounce of crystallized nitrate of silver in fifteen ounces of soft or distilled water. Divide the solution into three parts; set one of them aside, and add to the two-thirds aqua ammonia fortior till the yellowish-brown precipitate formed is redissolved in an excess of the precipitant, being careful to add only enough ammonia to render the solution perfectly clear again, and with but a very slight odor. To this ammonio-nitrate of silver solution add the third of the original solution set aside, which will cause a strong turbition of the liquid, but which will vanish by the addition of a few drops of glacial acetic acid. Then filter.

The salted paper may be floated upon this solution for two or three minutes, or as preferred by most practitioners, the solution is spread over the paper fastened with pins upon a clean board, either with a tuft of clean cotton wool, or a Buckle's brush.

It has occasionally been said prints made by this method are dull, monotonous, and without brilliancy. Whenever that has occurred it has not been the fault of the method, but the solutions were evidently not properly prepared. Ammonia but slightly in excess will surely make the print dull and grey; acidity in excess produces chalky and harsh prints. If only acid enough to redden litmus paper after 20 seconds immersion, the best prints and tones may be secured.

We have given the above formula as it was published more than forty years ago. We have substituted nitric acid for glacial acetic acid with signal success.

Toning prints on either of the foregoing papers does not present the slightest difficulties. If we submit them to separate toning and fixing, the gold bath, either with acetate and carbonate of sodium, or with borax must be considerably weaker than if intended for albumen prints. We may tone and fix them in the combined bath, described on page 39 PHOTOGRAPHIC TIMES, present volume, with equal success.

Positive black tones may be obtained with Dr. Just's platinum solution, viz.:

Water	200 c. c. m.
Borax and bitartrate potassium	2 to 3 grams
Chloroplatinite of potassium	1 gram

sufficiently diluted, or

3 parts potassium oxalate solution	(1: 3)
1 part chloroplatinite of potassium	(1: 16)

from two to four parts of water.

With this solution warmer tones are obtained than with platinum chloride acidified with nitric acid.

We have in our own practice but rarely resorted to platinum toning, the ordinary gold baths mentioned above being sufficient to answer our purpose.

In addition to the list of papers to be read at the World's Congress of Photographers at Chicago, given in our issue of April 28th last, we note that Prof. Charles F. Himes, of Dickinson College, Carlisle, Pa., will read a paper on "Photography as an aid to Education."

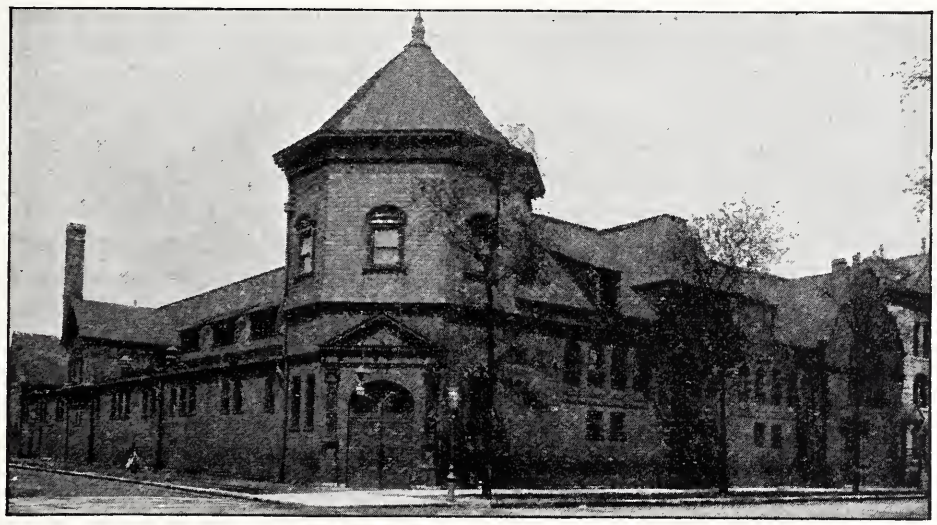
EDITORIAL NOTES.

In another column will be found a report of an interesting paper upon "Composite Heliochromy," read by Mr. F. E. Ives before the London Society of Arts. It is now a year since Mr. Ives gave his first paper upon this subject and exhibited at the Royal Institution his heliochromoscope, an instrument calculated to reproduce the colors of nature. The instrument, as then shown, was by no means perfect, however, for Mr. Ives tells us that certain inherent defects in the photographic negative-making process which have long been known to effect the rendering of gradations in monochrome photography, must also effect the color rendering. Since the reading of his last paper he has given much time and attention to discover some means of minimizing these defects and in defining the nature and extent of the limitations which they impose. Although his efforts have been in a measure successful, Mr. Ives estimates that it will take him another year to carry out all the experiments and make all the measurements necessary to enable him to finally demonstrate the capabilities and accurately state the limitations of the process, and to publish complete and satisfactory instructions for operating.

By the kindness of the President, Mr. Frank A. Place, we are able to present our readers with a photograph of the Second Regiment Armory, situated at the corner of Curtis Street and Washington Boulevard, Chicago, where the P. A. of A. Convention will be held July 18th to 21st, inclusive.

We are pleased to hear that the prospects of a large attendance is very considerable, as the Treasurer has had more dues paid and more members added than in any year previous since the organization of the Association. The Mayor of Chicago, Carter H. Harrison, has consented to deliver the address of welcome.

The London College of Surgeons has established a studio for photographic work in connection with medical science. Recently a number of specimens in spirit were required to be photographed. These were mostly contained in round bottles, and naturally the image of the object was distorted by refraction. The difficulty was surmounted by immersing the bottles containing the specimens in a tank of water, the sides of the tank being of plate glass. By this means the distortion vanished and perfect photographs for circulation and preservation were obtained.



Professor Lainer recommends the use of hydroxylamine hydrochlorate for the precipitation of the gold from gold-chloride solutions as a preferable method to those with sulphate of iron or oxalic acid.

If the hydroxylamine hydrochlorate and caustic potash are added to the gold chloride solution, and the latter heated, the process of precipitation will be completed in a very short time. According to Professor Lainer 0.1257 gramme of gold was recovered from a gold chloride solution containing 0.1277 gramme of gold.

Wilson's Photographic Magazine for June contains an article by George G. Rockwood, on "Thoroughness and Versatility," which we recommend to the thoughtful attention of our own readers. It is one of the best articles which ever appeared in our esteemed contemporary. It is brief, but to the point, and is full of suggestions

which are invaluable to the young photographer. "I have been a practical photographer for thirty-five years," writes Mr. Rockwood, "and, either on account of unusual stupidity or inability to absorb, I still learn something every day of my life, which is directly applicable to my business. * * * The point I wish to make is that we have very few good all-round men. * * * There is 'plenty of room at the top.' * * * I think I have always claimed in the press and in conversation, that there is room in photography for the best ability of almost any young man, and one who goes into photography does not let himself down, in fact he does not have to any more *lift his art up* to any great degree. It is, as it stands to-day, worthy of his best efforts. * * * A man equipped with a knowledge of artistic portraiture, who can, at the same time make a good copy, by either the wet or the dry process; who knows the difference between a portrait combination and a lens for mechanical purposes, who can with equal ability make a landscape, portrait or building, can secure better compensation in the employment of another than any other ordinary sphere. As he is his own 'boss,' as one will naturally desire to be, he will be an unequivocal success. * * * Let me urge young photographers to equip themselves according to this outline—not to be a Jack of all trades, but a *master* of one."

These are merely characteristic thoughts selected here and there from the article. We advise our readers to procure a copy of the magazine and read it all, thoughtfully.

VIEWING AN EXPOSURE FROM INSIDE THE CAMERA.

Were you ever actually inside of a camera while an exposure was being made? Through the courtesy of Mr. W. G. Riggs of the Southern New England Telephone Company, the writer has had that privilege, and also that of witnessing the development of one of the largest photographic plates ever made.

Mr. Riggs is conducting a very interesting piece of photographic work for the Telephone Company, at New Haven. Some time ago the company conceived the idea of reproducing a map of Connecticut to a certain definite scale. The work was offered to several professional photographers, but none was willing to undertake the task even at the liberal compensation the company was willing to pay; so Mr. Riggs who is an experienced and skillful, as well as enthusiastic amateur, undertook the work.

The map was photographed in sections, each negative representing the territory included in a telephone district, and from these negatives are printed, by contact exposure, positives of each section. These positives are then enlarged to the required scale, and here is where careful calculation is required, for each enlargement must be to precisely the same scale, or the parts will not fit together. Some of these enlargements are made on 18 x 22 plates, or smaller, which is not unusual; but the interesting part of the operation is the manipulation of some 24 x 36 plates, made by special arrangement with Mr. John Carbutt on an order from Messrs. Charles W. Whittlesey & Company. These plates are, by the way, the largest Mr. Carbutt can or has made on his machinery.

But imagine yourself standing *within* an immense camera while the exposure is taking place, for this is what Mr. Riggs actually does. He converts his dark-room, a room of about 8 x 10 feet, into a mammoth camera. The positive is fitted into an opening in the outside wall, and the lens properly hooded at a sufficient distance inside. A screen has been erected on a frame about four feet high, which is moveable to and fro on wooden tracks fastened to the floor, and to which the screen frame can be securely clamped when the exact focus is attained. What serves as a ground-glass, is a 24 x 36 sheet of plain glass, covered with white paper, and fitted into grooved clats on the screen frame.

A black cloth is thrown over the lens and by faint red light the box of plates is opened, and one of them secured into the exact position vacated by the so-called ground-glass. We were now standing, as it were, inside of a camera 10 x 8 x 7 feet, *not inches*, with the plate in position, and presently Mr. Riggs raised the cloth over the lens, and we saw what probably not one enthusiastic photographer in a thousand ever beheld. We actually saw the image itself acting on the sensitive film, and for thirty seconds we watched its fine pencils of light on the pure white film.

Next came the developing. An iron tray of about 3 feet by 3 feet had been especially constructed and japanned. It took three quarts of developer. "Eiko cum Hydro" was used. One quart was old developer, and two quarts new of one-third the ordinary strength. This brought the image up slowly, and so gave plenty of time to flow the developer evenly. The same tray had to be used for fixing, and while the plate was being washed of developer, the tray was rinsed, and then the acid fixing bath was applied. The plates were coated with Carbutt's No. 16 Emulsion. The work

is thoroughly scientific and unique. All this was done, and that practically inside the camera, viz: The plates were opened, the focussing done, the exposure made, the plate developed and the plate fixed. To the writer the most impressive part was when for 30 seconds we actually watched the image portrayed on the film.

The subsequent process of finishing the map from these sections is performed by Mr. Riggs' assistant, Mr. F. P. Lewis. This operation will not be described here, but it is extremely ingenious, and requires consumate skill in its execution.

Charles W. Whittlesey.

A NEW PHOTOLYTE.

[Photographisches Archiv.]

A BOTTLE half filled with a solution of rhodan-aluminium* prepared for the purpose of using in a combined toning and fixing bath speedily changed to a light-red color when removed from the dark room to diffused daylight. On returning to the dark the color vanished in the space of a minute. When placed in sunlight the solution turned to a dark-red and maximum point within from one to two minutes. After replacing in the dark chamber this dark color vanished in about the same time.

The intensity of color was reduced considerably by shading a portion of the glass vessel containing the solution. The experiment was repeated twenty times and more, but no decrease in sensitiveness could be observed.

A concentrated aqueous solution of rhodan-ammonium behaved in the same way, but a diluted 5 per cent. solution of it remained colorless after a light-exposure of several days. Other sulphocyanates I have not yet experimented with.

The color obtained by exposing the salt to light is very similar to that produced when a ferric salt is added, and I was led to believe in the presence of a ferrous salt, which, under influence of light, might be changed into the ferric state and was encouraged, in my opinion, by the fact that by the exclusion of air the phenomenon did not occur, or except in a very slight degree.

A trace of iron might have been present although the substance was labeled "chemically pure." The phenomenon is certainly of high interest to the analytical chemist. But the opinion expressed is not at all tenable; iron combinations are not oxidized by light, they are reduced to a lower state of oxidation, a proof of which is given in the numerous iron printing processes.

* Rhodan is the word used by German scientists for sulphocyanate.

I will, however, mention what Grotthus specially says about iron rhodanid. He reports that the aqueous, the alcoholic or the etherous solution of such blood-red combination discolors rapidly in blue-green light. With discoloration sulphocyanite is formed, and the process is much accelerated in the focus of a concave mirror. In the dark and under the action of air the color returns.

We have here a reverse action of that described in my experiments.

By adding ferrous salts to either the sulphocyanites of ammonium or aluminium the light sensitiveness was not visibly increased. The chemical combination of this red compound has not yet been stated, but, have accepted for the present the following hypothesis.

By forcing an electric current through a solution of ferro-cyanite of potassium heated to boiling point, an orange-yellow body, persulfo-cyan, $C_3N_3S_3$. It separates on the positive pole. The substance is formed in normal temperature, under the action of light, but remains in solution.

Decomposition occurs only when an acid is present, carbonic acid for example, which plays so important a part in the photolysis of the alkali metals.

Paper coated with rhodan ammonium or alluminium, exposed to light under a negative gave a faint reddish brown positive within an hour.

The color does not disappear in the dark, or but very slightly. It must be remembered that Goppelsröcher printed upon fabrics with persulfocyan made by electrolytic processes. Whether or not thin, faint pictures can be intensified in color has not yet been made a matter of experiment.

R. Ed. Liesegang.

COMPOSITE HELIOCHROMY.

[Society of Arts, London.]

As was fully explained in my paper of last year, my own process of composite heliochromy consists, first in the production of a triple photograph, to represent the effect of light from the object upon the three separate fundamental color-sensations, in accordance with the Young Helmholtz-Maxwell theory of color-vision; and, second, in the blending of the three images into one, either optically, by means of the triple lantern or the heliochromoscope, or otherwise, by the superposition of three transparent color prints. Although the three fundamental color sensations are red, green, and blue-violet, the three images of the triple photograph are not made through red, green, and blue-violet glasses, nor by the action of red, green, and

blue-violet rays, but each by the joint action of all rays that have power to excite the respective fundamental color sensation. Not only do the red rays, but the orange, yellow, and yellow-green rays also excite the fundamental red sensation; the orange rays affect it even more powerfully than the pure red. The photograph, to represent the effect upon the red sensation, is, therefore, made by the action of all these rays, and in due proportion, in accordance with Maxwell's measurement. The photographs of the green and blue-violet sensations are also made by the joint action of rays of various colors, in proportion to their power to excite the respective fundamental sensations, according to the measurements of Maxwell and Abney. But, when the images of the triple photograph are blended into one, by means of the triple lantern or the heliochromoscope, the photograph of the red sensation is illuminated by red light only, the photograph of the green sensation by green light only, and the photograph of the blue-violet sensation by blue-violet only. In other words, the three images of the chromogram represent the action of all incident light upon the respective fundamental color sensations, and the light by which each image is illuminated in the lantern or heliochromoscope represents the sensation itself. The result of blending into one, the three images of the chromogram—each being illuminated by the kind of light intended for it—is a faithful reproduction of the object photographed, in all its subtleties of light, and shade, and coloring.

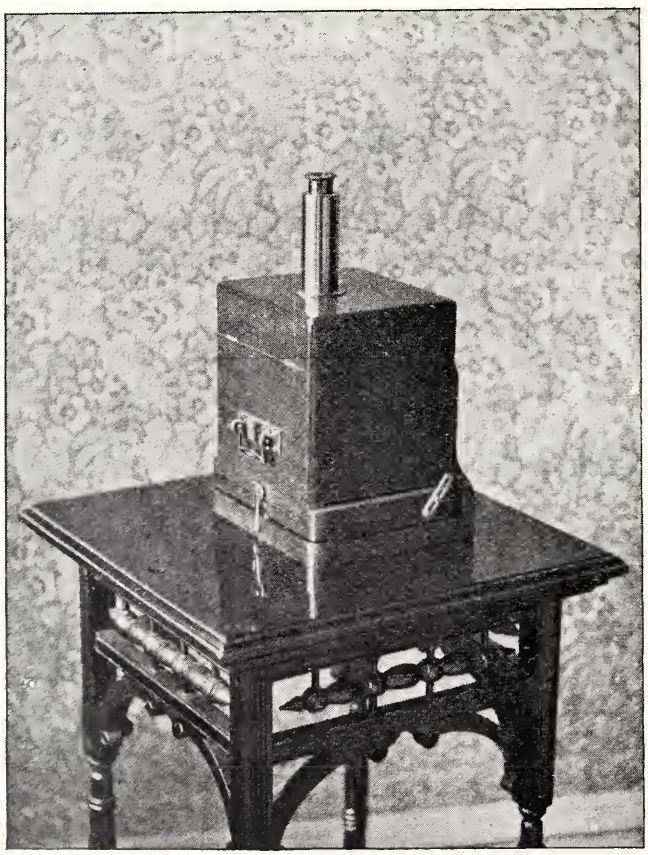


FIG. 1.—IVES' APPARATUS.—EXTERIOR.

Last year, my projections on the screen were made with the lime-light, the performance of which was very unsatisfactory to me, in comparison with sunlight projection, which I had employed at my house in Philadelphia. Now I am provided with a lantern adapted for electric light, and will repeat my demonstration with it before proceeding to describe the color-camera and heliochromoscope. In this lantern a single arc electric light is the source of illumination. After being collected by a condenser system in the usual manner, the light from the arc is subdivided into three portions by means of a system of mirrors, some of which are transparent, so as to both reflect and transmit light, substantially as in the heliochromoscope camera, which I shall describe later on. In the path of each divided beam of light is placed a smaller condenser and a color screen; in front of these a chromogram; and then the objectives by which the images are projected and superposed. This device differs from all others that have been proposed for the purpose, in that the disc of light on the screen remains white when the electric arc varies its crater. The systems formerly proposed for use with a single light would be quite useless under such conditions.

I commence by demonstrating the production of white light by mixing the red, green, and blue-violet rays. In the heliochromoscope the intermediate rays—the yellow and blue-green—are entirely suppressed, only comparatively narrow bands of red, green, and blue-violet showing, if a spectroscope is applied to the eye-piece. The colors that I am now using in the lantern are not quite so pure; the spectroscope shows broader bands of color, but they are still separated from each other by darker bands in the yellow and blue-green parts of the spectrum. With these screens the illumination is sufficient for projections of moderate large size, and the colors are pure enough to demonstrate the fact that the red and green light mix to produce yellow, and that the addition of blue to the yellow makes, not green but white. The insertion of one of the chromograms shows that the infinite variety of the colors of nature can be obtained by the intermixture of the three colors, red, green, and blue-violet in various proportions.

Scientists have known these facts about the mixture of colored lights for a long time, but I take advantage of every opportunity to repeat the

demonstration, because many people still doubt the facts.

I must also take this opportunity to again emphasize that it would be quite impossible to obtain any such result as that now shown with any system employing the same color-screens both for photography and for projection, as was advocated by all other writers upon this subject previous to my publications in 1888. The science of composite heliochromy cannot be understood without knowledge of this fact, which I have repeatedly pointed out and explained, but which certain well-known writers have, nevertheless, persistently ignored.

The illusion of nature will be found even better in the heliochromoscope than on the screen, because the colors are purer, and the illumination is better.

The method of superposing three images upon a screen by means of three separate objectives, is sufficiently known, and need not be described in this paper. The system employed is not only a very different one, but, I believe, quite different from anything else that has ever been suggested. I shall try to make it clear by reference to a diagram (see Fig. 2) showing the construction of the perfected instrument.

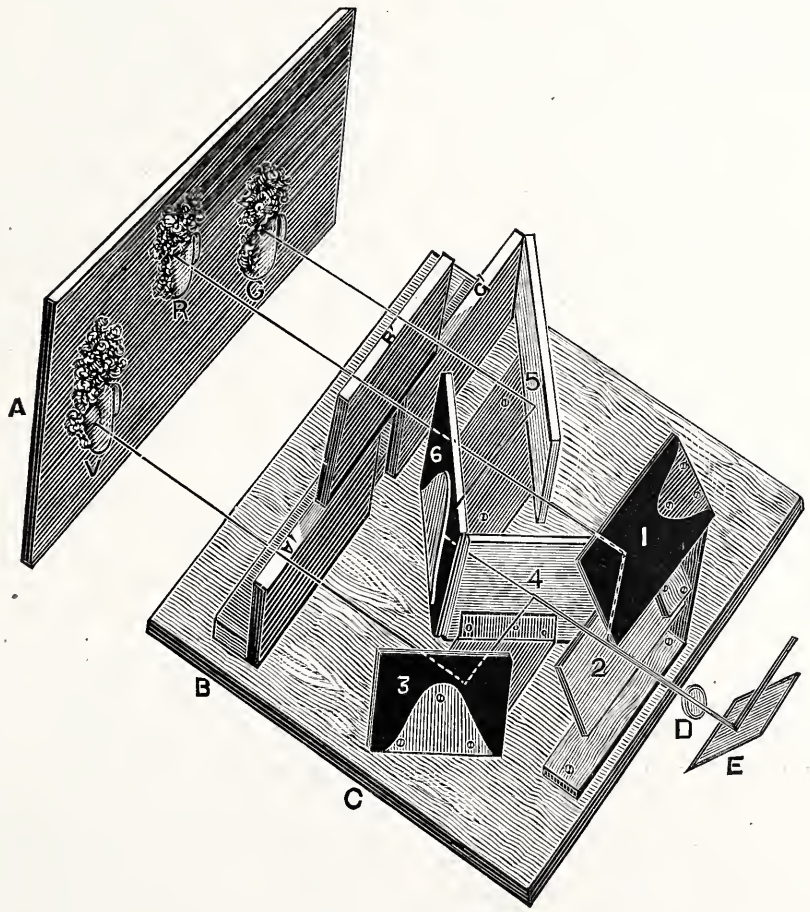


Fig. 2.—Ives' Apparatus.—Interior.

A is the chromogram, *B*, *C*, a removable baseboard, carrying the color-screens *B*, and the mirror system *C*. *D* is an achromatic objective lens, and *E* a silver mirror.

Light transmitted by the image of the red sensation, R, passes through the red color screen, R′, to the silver mirror, 1, downwards to the transparent mirror, 2, and forwards (except the portion which passes through the transparent mirror and is lost), through the objective, *D*, to the inclined mirror, *E*, and upwards into the eye-piece, under which a reduced image is formed by the objective, *D*.

Light transmitted by the image of the blue-violet sensation, V, passes through the blue-violet color screen, V′, to the silver mirror, 3, sideways to the transparent mirror, 4, forwards through the transparent mirror, 2, and objective, *D*, to the inclined mirror, *E*, and upwards into the eye-piece, under which a blue-violet image is formed, exactly coincident with the red image. That portion of the light which passes through the transparent mirror, 4, is lost, and also that which is reflected downwards by the transparent mirror, 2.

Light transmitted by the image of the green sensation, *G*, passes through the green-color screen, *G′*, to the silver mirror, 5, thence sideways to the

silver mirror, 6, forwards through the transparent mirrors, 4 and 2, and the objective, *D*, to the inclined mirror, E, and upwards into the eye-piece, under which a green image is formed, exactly coincident with the red and blue-violet images. A portion of the green light is lost by reflection from the transparent mirrors, 4 and 2.

The fact that the light-rays, from *R*, *V.* and *G*, travel equal distances before entering the eye, and have a common axis after emerging from the mirror system, secures a direct blending of the images, which must otherwise be projected upon a matt surface in order to be seen as a single image. Prismatic devices, as proposed by Du Hauron, and others, fail in this respect, and are, therefore, useless.

(*To be continued.*)

THE ART AND PRACTICE OF GELATINO-CHLORIDE PRINTING.

(*Continued from page* 291.)

PART I.

THE MANUFACTURE OF THE PAPER.

CHAPTER III.

Various Emulsion Formulæ.

THE first formula for a gelatine emulsion was given by Hardwich in 1856; this was made up as follows:

Citric acid	6.5 grammes
Carbonate of soda, q. s., to neutralize chloride of ammonium	6.5 grammes
Gelatine	0.6 grammes
Water	300 cc.m.

Paper was coated with this solution and when dried was sensitized with nitrate or ammonia nitrate of silver. As will be seen here the quantity of gelatine employed is very small, in fact, this is really a plain paper process, gelatine being used to hold the salts.

In 1881 Wilkinson recommended a formula which consisted of

Barium chloride	2440 grains
Gelatine	2000 grains
Water	20 ounces

The gelatine was allowed to swell and then dissolved, after which the barium chloride was added. Next was dissolved 1700 grains of silver nitrate in 5 ounces of water, and this was added gradually to form the emulsion.

A year later Abney suggested a gelatino-citro chloride and gave his preference to the following:

ABNEY'S CITRO-CHLORIDE.

A.

Chloride of sodium	3.7 grammes	57	grains
Citrate of potash	1.8 grammes	28	grains
Water	30 cc.m	1	ounce

B.

Silver nitrate	11 grammes	170	grains
Water	50 cc.m	1¾	ounces

C.

Gelatine	15 grammes	231½	grains
Water	175 cc.m	6	ounces

B and C (after the gelatine has swollen and been dissolved by gentle heat) are mixed together, and added with agitation, little by little, to A. When set, wash slightly for a quarter of an hour in cold water, drain, melt, and add 15 cc.m of alcohol.

In 1885 Messrs. Ashman and Offord conducted a series of experiments which are fully detailed in the colums of *The Photographic News* of that year. They show the use of various salts in different proportions. The process they chiefly recommended was the following, consisting of two emulsions—a chloride and a citrate:

NO. 1.—CHLORIDE EMULSION.

A.

Gelatine	3 grammes	46	grains
Ammonium chloride	0.64 grammes	10	grains
Water	33 ccm	1	ounce

B.

Silver nitrate	2 grammes	31	grains
Water	10 ccm	3	drachms

The gelatine is allowed to soak in the water, the chloride of ammonium added, and the whole melted by the aid of a gentle heat, and then B added. When the emulsion is thoroughly mixed a little should be taken out and allowed to drop on to a clean china plate, and tested with a drop of neutral chromate of potash, to see if there is free nitrate of silver, which is immediately evident by the intense orange-red color formed. If silver be in excess, a few drops of a solution of ammonium chloride must be added to correct the same. The second emulsion is a citrate of silver one, with an excess of nitrate of silver.

NO. 2.—CITRATE EMULSION.

A.

Gelatine	3 grammes	46	grains
Water	30 ccm	1	ounce

B.

Citric acid	2 grammes	31	grains
Water	10 ccm	3	drachms
Ammonia	quant. suff. to neutralize		

C.

Silver nitrate	2 grammes	31	grains
Water	5 ccm	75	minims

The gelatine is allowed to soak for an hour in water and is then dissolved by heating gently. B is added and then C. One part of this emulsion is to be mixed with three, four or five parts of the chloride emulsion. The more citrate emulsion the redder the tone of the print before toning and the browner after. The best proportion is one of citrate to four or five of chloride emulsion. This mixture gives deep rich purple tones. The emulsions when mixed are allowed to set at once, or, if at all granular, may be heated in a water bath at a temperature of about 80 deg. C. for about five minutes, then allowed to thoroughly set, squeezed through canvas in the usual manner for bromide emulsion, washed for five minutes with constant stirring in water, the washing water added to the residues and fresh clean water added to the emulsion, and again washed for five minutes; the emulsion is then collected, drained thoroughly free from water, melted and used.

At the St. Louis Convention of 1886, Ashman read a paper upon this subject. His new formula he stated to be—

A.

Citric acid	20 grammes	308 grains
Water	100 ccm	3½ ounces
Ammonia	quant. suff. until *only slightly acid*	

B.

Silver nitrate	45 grammes	694½ grains
Distilled water	480 ccm	17 ounces

C.

Gelatine	45 grammes	694½ grains
Ammonium chloride	6.5 grammes	100 grains
Water	480 ccm	17 ounces

D.

Silver nitrate	46 grammes	710 grains
Water	180 ccm	6¼ ounces

C is prepared in solution as directed for the previous formula and D is slowly added with constant agitation, then A and finally B. The emulsion is washed as above described.

Another class of emulsion for positive is that in which an acetate is employed to form an acetate of silver.* Starn's formula for an emulsion of this description is

A.

Gelatine	40 grammes	617 grains
Acetate of soda	8 grammes	123½ grains
Water	960 ccm	34 ounces

B.

Silver nitrate	28 grammes	432 grains
Water	480 ccm	17 ounces

C.

Chloride of sodium	4 grammes	61½ grains
Acetate	6 grammes	92½ grains
Water	480 ccm	17 ounces

Photographic News, 1886.

B is mixed in the usual way with A and then C gradually added, and finally

Gelatine ..... 160 grammes

swollen and dissolved in water is added, and the total bulk of the emulsion made up to 2,280 ccm., 101½ ounces with water. No washing is required.

A formula for a tartrate emulsion was recommended by Barker and consisted of

V.—Barker's Tartrate.

Gelatine	175 grammes	2,700 grains
Chloride of ammonium	18 grammes	277½ grains
Rochelle salts	50 grammes	771½ grains
Silver nitrate	75 grammes	1,157½ grains
Alcohol	120 grammes	4¼ ounces
Water	2.5 litres	88 ounces

The salts are dissolved in the water, the gelatine added and soaked for an hour or two, then melted and the silver added, and the emulsion kept at 100 degs. C. for ten minutes, allowed to set and then washed once, or it may be used unwashed.

Vogel formula for a gelatine citrate emulsion was given in the *Photographic News* as follows :

Solution 1.

Gelatine	20 grammes
Distilled water	300 c.c.
Chloride of ammonium	1.5 gramme

Solution 2.

Citric acid	5 grammes
Water	40 c.c.

Solution 3.

Silver nitrate	10 grammes
Water	40 c.c.

Solution 1 is placed in warm water of from 40 to 50 degrees Cels. until the gelatine has melted, when solution No. 2, and, finally, solution No. 3, is added with stirring. The emulsion should then be filtered through flannel moistened with distilled water. To prepare the paper with the emulsion (plain paper coated for this purpose with a layer of baryta is in the market under the name of "aristo-chromo paper") place it in a dish with distilled water until it has become uniformly wet. It is then removed, and, with the baryta film up, laid on a clean glass plate, slightly larger than the paper; a sheet of thick blotting paper is then placed upon the plain paper, a squeegee being passed over the former, until the baryta paper adheres quite evenly to the glass plate. The edges of the paper are then pasted by means of strips of gummed paper. After the glass plate mounted with the plain paper has been levelled on a levelling stand the emulsion is poured over it and uniformly spread with a glass rod. The temperature of the emulsion during coating should be 50 degrees C. After the emul-

sion has set the glass plates may be placed upright to dry. The dry paper can be easily stripped from the glass after the edges of it have been cut with a penknife.

Walter E. Woodbury.

(*To be continued.*)

PHOTOGRAPHY AS A GUIDE TO ARTISTS.

PHOTOGRAPHY can not only show up impostors and discover new stars, unravel forgeries, and draw wonderful plans from the height of a balloon, read the vibrations of the wings of an insect, and control the movements of an engine, but it also extends its aid to æsthetics.

A tree can no longer be painted from memory. Photo graphic views are so common that the painter must keep to these "quotations from nature." The sacred text is so well known that any artist who dares change one single word is at once shown to be at fault.

Compare Vernet's horses, with all four legs outstretched in the classical attitude of a hare on the spit, with Merrit's galloping chargers, every hoof under the body, and ask yourself whence comes this difference in the representation of the same movement. It is because photography proves the ignorance of most painters of horses. A horse has scarcely ever galloped in a picture as it really does on our meadows or our roads.

But photography has revolutionized art not only with regard to *outline* but also *in perspective*. It not only modifies the painter's sight, but it very often does away with the painter himself altogether.

However everything that photography produces is not necessarily correct. Take a galloping horse, for instance. In Muybridge's analysis of this movement certain attitudes will be found which far from indicating rapid movement, seem to portray absolute rest. Movement is the rapid succession of an infinity of different attitudes, and, therefore, the representation of movement can only be the result of these attitudes. The artist must *select* the proper attitude.

A photographer may be an artist. If not in the interpretation, at least in the selection of his subjects, and by his power of selection alone he can impress his own personality on the work done by the sun on the sensitive plate.—*Extracts from Revue des Deux Mondes.*

Notes and News.

We regret to announce the death of Mr. Charles M. Bell, the well known Washington photographer.

Several new companies have been organized to make Aristotype paper. One especially which proposes to make a collodion paper superior to anything now upon the market. This company is probably more strongly financially backed than any company heretofore organized.

The sailors of the warships stationed at the Navy Yard were recently treated by the Brooklyn Academy of Photography to a stereopticon exhibition. The pictures were evidently much appreciated by the jolly sailors, especially a number of views of the recent Columbian parades and naval review.

During the night of Thursday, May 11th, the premises of Henry Kahn & Co., opticians, 642 Market Street, San Francisco, were entered and a large quantity of gold spectacles and eye-glasses of various styles, weights and qualities, as well as eye-glass chains and silver lorgnettes were stolen. Any information concerning these goods will be thankfully received and rewarded.

Messrs. Lumiere have been studying the properties of various substances in relation to photography. In the salts of cerium, a metal allied to iron, they have found the same property which the ferric salts have of being reduced to the ferrous state. The ceric salts remains yellow while the cerous salt turns white by the action of light. This they utilize by oxidizing the ceric salt with an azure or phenol, and so obtaining images varying in color according to the organic compound used.

The following is a Leicester (England) photographer's advertisement:

IF YOU WANT A

Photograph taking of your Wife, Children, Horses, Cattle, Dogs, House,

SWEETHEART,

Or yourself, you cannot do better than

CALL AND SEE SPECIMENS

At the West End Studio, 11 King Richard's-road,

OR WRITE FOR PRICE LIST.

Out-door Photography in or out of town. Distance no object.

HEAWOOD, Proprietor.

Mr. Rockwood's Union Square gallery is one of the best paying photographic establishments in the city. Sometime ago Mr. Rockwood offered it for sale, as he preferred to devote his entire energies to the management of his new studio on Broadway, though both galleries had been paying well from the start. He has now withdrawn the Union Square gallery from the market, intending to thoroughly renovate and improve it, and retaining the profits of its increased business for himself. Someone has lost a golden opportunity in not purchasing this gallery when it was offered for sale. Its location on Union Square, and the popular prices which have prevailed there, attracted a very large patronage.

The Princess Eulalia and her husband have apparently not forgotten to devote a share of their patronage to New York photographers. According to a daily "no event in New York has drawn the royal couple out of their rooms so early as yesterday's engagement at the photographer's." "The Prince had been photographed in civilian dress before his wife arrived Then they alternated in looking pleasant before the camera, one posing while the other dressed." Several changes of costume were made by each and many photographs taken. Finally several groups were formed of the Prince and Princess together with other royal personages.

Correspondence.

CERAMIC PHOTOGRAPHY.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: You are requested to publish the enclosed for the benefit of *all*. More for the professionals. You will see the American patent leaves out the most essential part—the bichromate of potash or ammonia, the other ingredients are mere coloring matter. You will also see that this patent has been anticipated* in 1873, which exactly covers the same ground. By publishing both, you will see what a favor you can confer on the working photographer.

Yours respectfully,
J. H. Williams.

We regret that we cannot afford space to publish the copies of patent specifications sent by our correspondent. From the following numbers, however, any one interested in the subject can obtain and consult them himself. U. S. Patent Office, Francis B. Forster of New York. "Process of making transparent photographs on glass. Specification forming part of Letters Patent No. 494,526, dated March 28, 1893, application filed April 14, 1892, serial No. 429,194.

British Patent. Léon Freret (a communication from Paul Marny Godard). A "method of producing and reproducing drawings, devices and designs on porcelain, delph-ware, and such like materials," June 12, 1873, No. 2,079.

THE SUNDAY PRESS AND PHOTOGRAPHY.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: The photographic column of a sensational Sunday paper has, among other very interesting matter, a query and answer, which I will reproduce because of its quaintness, and to show by this one example how cautiously these literary efforts made by Sunday photographers should be taken generally.

"The solution which I have used up till now is sodium ferric-oxalate (see page 273 'American Annual, 1892'). Coat paper with this, expose under negative and develop with a 1½ per cent. solution of nitrate of silver. What I wish to know is: how can I combine the iron with the silver salt, so that I can coat the paper with this solution? This result is said to have been accomplished by a Dr. J. J. Nicol, of Birmingham, England. After exposing under negative he then develops with a bath containing borax, rochelle salts and bichromate of potassia, varying the strength of the solution to get different tones. (See page 164, 'Annual of '93.') I have tried to combine the iron with the silver, but cannot get any results, as there is always a heavy precipitate. J. J. STIER."

"I regret that it is impossible for me to tell you just how to combine these salts without a prescription. They can be combined, but the method is a trade secret. It is known to Dr. Nicol, the inventor of the kallitype, in England, and to one or two chemists in this country who have experimented and overcome the difficulty. Your only way would seem to be an exhaustive series of chemical experiments. I would suggest, however, that if you wish to continue making this paper, or trying to, that first you filter the solution and extract the precipitate, and you will then be able to judge of its working strength.

"There are a number of formulas, however, some of which may work more successfully in your hands than those you have been trying, but these I am constrained to hold over till next Sunday for lack of space now."

I have not the remotest doubt of the impossibility of the author to tell how to combine the two salts, but that it is a secret to effect a union of them on paper is quite new to me. The process has been described in our journals, it has been demonstrated in our societies, and very fine kallitype paper is made by several American firms. Evidently more than one or two chemists have solved the problem.

The suggestion to filter off the precipitate and test the filtrate for strength, and continue the experiment on this basis, is highly scientific, I must say.

The precipitate, argentic oxalate, with the iron salt in excess constitute the sensitive substances of this process. But after all silver has been precipitated and filtered off, rochelle salt and borax can not possibly develop a picture from paper coated with the filtrate. For lack of—what? "space," it is said, distinct information on the subject is withheld till "next Sunday."

I am anxiously waiting for that information, but am bold to say, it is neither a herculean task, nor does it require so much skill or great knowledge of chemistry to make kallitype paper. It is true Dr. Nicol's formula No. 2 does not work with every tyro not yet out of his teens, but it does so with others. The ferric oxalate must be neutral, that is one condition. I have made kallitype paper according to the formula, and also with the sodium and the ammonium double salt of ferric oxalate. All that is required is to proceed as when making chloride of silver paper, salt the paper first in the oxalate, dry, and sensitize by floating upon the silver bath.

Senex.

*English

Photographic Societies.

An Exhibition of Lantern Slides from the Lantern Slide Society of London, England, was held at the rooms of the Society of Amateur Photographers of New York, on Friday evening, May 26. The set composed slides from many of the most distinguished English amateurs.

The Photographic Society of Great Britain will hold its annual exhibition from Monday, September 25, until Wednesday, November 15. Entry forms and all particulars can be obtained from the Secretary, 50 Great Russell Street, London, W. C. Foreign exhibitors are invited to contribute. The Society will pay the carriage of photographs on the return journey, and provide frames or portfolios during the exhibition for photographs approved by the judges. There will be no charge for wall space.

Brooklyn is happy in the possession of at least three good societies devoted to the interests of photography. The Academy of Photography has rooms at 177 Montague street which comprise dark rooms, studio, copying and enlarging camera rooms all equipped with the appliances of a first-class gallery. The rooms are well fitted up, practical photographers are in attendance and everything possible done to help the amateur in his troubles and guide him successfully through his initial difficulties. During the fall and winter months the academy gives monthly lantern exhibitions at Remsen Hall. Exhibitions are also held.

The Department of Photography of the Brooklyn Institute is another well-established association with a membership of nearly three hundred enthusiastic photographers, many being ladies. They occupy rooms at 201 Montague street, next the Brooklyn Library, comprising a large studio room with north light, a dark room and copying room, all fitted up with the necessary accessories. Illustrated lectures on photography, and lantern exhibitions are given and outings frequently arranged.

The Central Camera Section of the Young Men's Christian Association is another prosperous camera club. Its rooms are in the Young Men's Christian Association building and are fitted up with excellent facilities for all kinds of work. Regular meetings are held and the sessions closed with an exhibition of lantern slides by the members.

The Third Print Exhibition of the Department of Photography of the Brooklyn Institute has been brought to a close. A novel method of ascertaining the judgment of the visitors was introduced this year. Each visitor was furnished with a slip of paper, upon which they were to write down the ten pictures which they considered the best. The result is as follows: C. A. Burlingame, 22; A. S. Barney, 22; Gould W. Hart, 17; Geo. W. Street, 17; J. T. Montgomery, 15; H. J. Newton, 12; G. W. Wundram, 12; E. G. Tremaine, 12; W. E. Platt, 11; G. M. Boardman, 11; W. H. Cooper, 6.

The Editorial Table.

"The Lighting in the Photographic Studios," by P. C. Duchochois, second edition, revised and enlarged, New York, The Scovill & Adams Co.

This valuable instruction book proved so popular with the photographic profession that the first edition was quickly sold, and a second edition was demanded. The Scovill & Adams Co., with characteristic enterprise purchased the author's copyright, and have brought out the second edition uniform with the other numbers of its well known photographic series, of which it forms No. 44.

The book has been thoroughly revised and considerably enlarged. It has been entirely re-set in new type, which is large and clear, and is printed on good paper with liberal margins. The publishers have, moreover, added an excellent portrait, in half tone, of the author, as a frontispiece to the book, and send it out once more, in an improved form, on its career of usefulness. The price remains the same, 75 cents in paper covers; cloth bound (library edition) $1.00. It may be obtained of the various dealers in photographic supplies, or will be sent postpaid on receipt of the price, by the publishers.

VERY SIMPLE.

"No, I haven't had a photograph taken in ten years. I'm so sensitive in regard to this big bald head of mine."

"Well, have yourself photographed with your hat on."

"Gosh! I never thought of that!"

Queries and Answers.

77 VAL. W. STARNES, Augusta, Ga.—

1. In the "Photographic Instructor" you state that eikonogen will not give dull whites on bromide paper, but though I follow the formula there given, I can't get pure whites. With the ferrous oxalate I do, but it is so dirty, and the materials for compounding it expensive and hard to procure from local druggists, so that I would prefer to use the eikonogen.

2. Should the citric acid bath be used with the eikonogen as well as the oxalate? The "Instructor" does not mention it, but I have employed it. The difference in the cost of bromide and platinum is so little, that I would not care for the former were it not for the facility with which prints on the "C" paper can be retouched in crayon or pencil.

3. I have never seen a print on kallitype paper; do you consider it *more artistic than* albumen or "omega" paper in its effects?

4. Given two lenses, each of, say 19 inch focus, will they not make exactly the same-sized image of an object on the ground-glass, even though one is called a "long focus lens, especially adapted for photographing distant views," and the other a "wide-angle"?

By answering the above queries you will greatly oblige.

77 *Answer.*—1. Query not very plainly expressed. What makes the ferrous oxalate dirty? Have we not always urged the use of only perfectly pure chemicals, and filtering their solutions?

Were we required to decide on the question by which means bromide prints are best developed, we would pronounce, without hesitation, in favor of eikonogen, because it is the cleanest, requires the least exposure, and produces finest middle tints and excellent positively black tones. Amidol is also very good.

2. Do you mean the clearing bath, the intermediate clearing bath of the original Eastman formula? The citric acid is intended to dissolve or rather keep in solution any iron salt still adhering to the print. There is no necessity of using a clearing bath of this description when eikonogen is the developer. But we advise the use of the acid fixing bath, that with acid bisulphite of soda. It is all that is necessary to make the prints brilliantly white in the lights, and intense in the shadow portions.

Retouching or finishing photographic pictures on paper is, properly speaking, not within the province of technical photography. We do not pretend to be artists.

3. Kallitypes are iron prints, developed by means of a soluble silver salt. But virtually is the deposit forming the picture not iron, but silver.

Whether or not the tones produced are artistic is a matter of taste.

4. Lenses of equal foci produce pictures of the same size exactly. Comparing a rectilinear with a wide-angle, the latter will probably make the image a trifle larger.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
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SOME TESTIMONIALS FROM "THE WORLD'S FAIR PHOTOGRAPHER.

"**The 'Henry Clay'** is just right—perfection," writes B. W. Kilburn, the World's Fair Photographer.

"**The Plate Holders** (Henry Clay) arrived yesterday, and are A1."—B. W. KILBURN.

"**The Swift lenses** are in daily use, and I do not see how I could do without them "—B. W. KILBURN.

"**I have put the Swift lenses through hard,** and they please me very much. They are another power that I gladly welcome. * * * I would not part with them for double their cost," writes Mr. B. W. Kilburn, World's Fair, Chicago, Ill.

Swift Lenses.—"I enclose two proofs made instantaneously with the Swift lenses. They are most perfect negatives, all that can be desired. I have made lots of interiors with them, and find the lenses just as perfect for that work, and as good, and perhaps better than any lens I have got. I am pleased with them, you may be sure."—B. W. KILBURN.

"**The Photographic Times** is one of the indispsnsables."—A. T. TWEEDIE, Cadillac, Wis.

The American Annual.—"Its motto is 'Still Onward,' and you may be proud of it."—G. WATMOUGH WEBSTER.

A new edition of "Lighting in Photographic Studios," by P. C. Duchochois, thoroughly revised and considerably enlarged by the author, has been issued by The Scovill & Adams Co. The book contains a frontispiece portrait of the author in half-tone, and is much improved in other respects. Price remains the same, 75 cents in paper covers, $1 cloth bound, and will be sent to any address postpaid on receipt of price.

Correspondence.

AMIDOL.

WHAT ONE PHOTOGRAPHER THINKS OF IT.

TO THE SCOVILL & ADAMS CO.

Gentlemen: It is with pleasure I write you that I have tried the Amidol Developer. I have not had my heart to leap for joy so, since I have been working the dry-plate, until I tried amidol. It carried me back to the good old days of the wet-plate (and it was with a sad heart I had to give it up.) * * * I have been plodding along trying to get the good old wet plate effects, but failed until I struck amidol. It made me feel like a new man. What splendid soft negatives it makes, and you are not all day about it either. I cannot say enough in favor of amidol, it works so well. I found I could get anything I wanted. It works like a charm, and if we can always get it pure, like the sample you sent, it will be a joy to my life. I send you a postal note enclosed, for which please send me another ounce of amidol by return mail. Yours truly,

J. H. BLAKEMORE.

Mount Airy, N. C.

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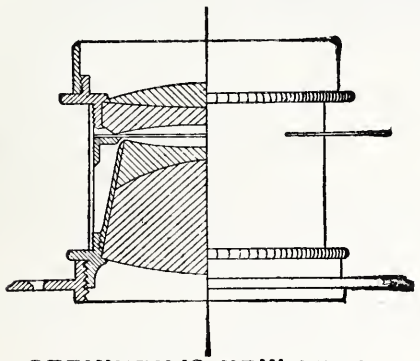
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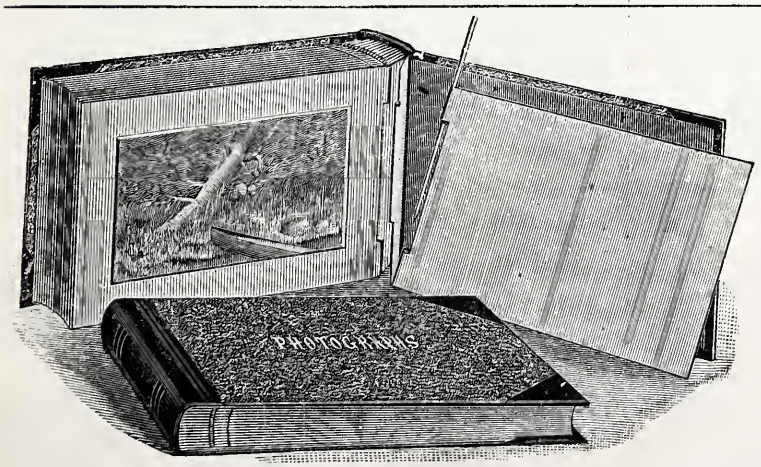
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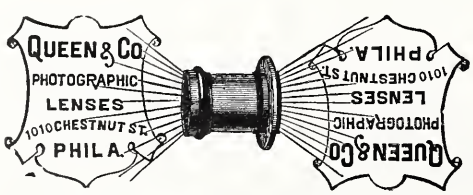
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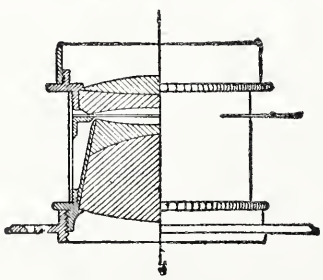
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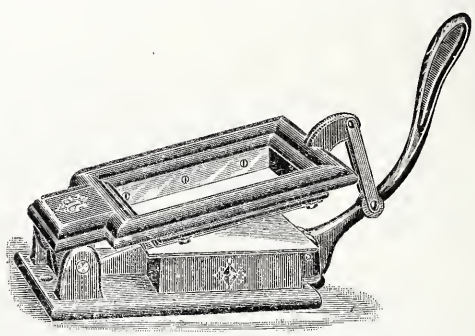
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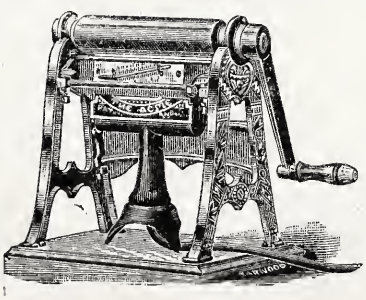
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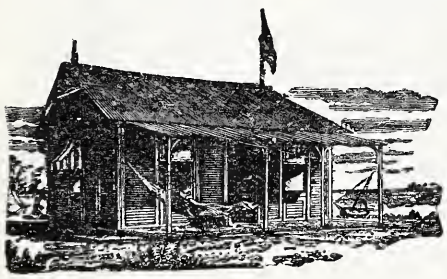


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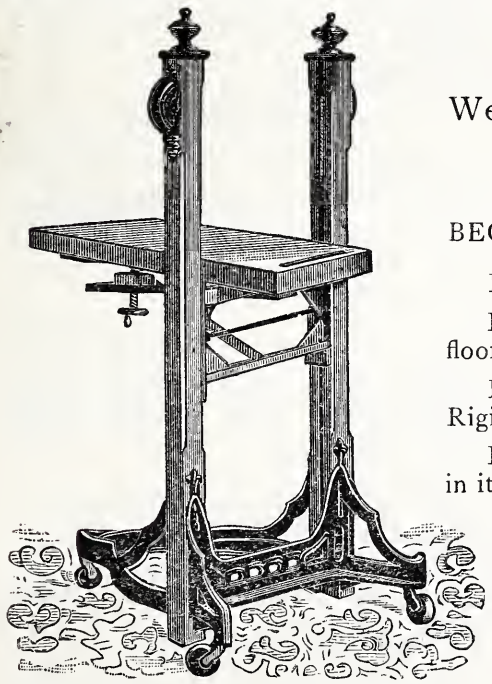
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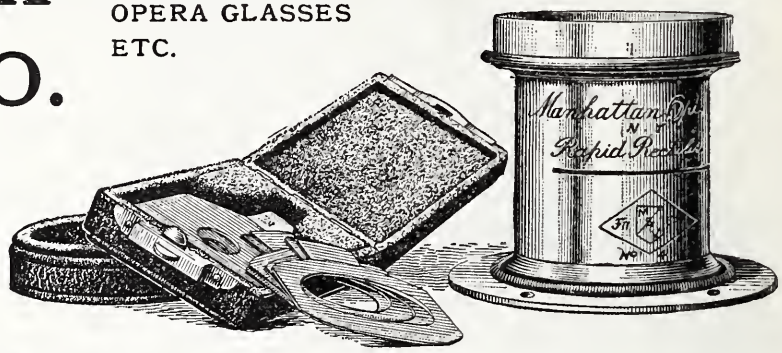
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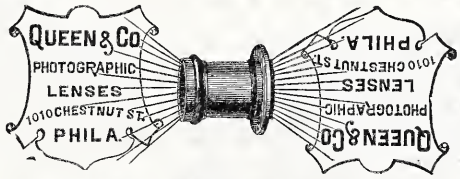
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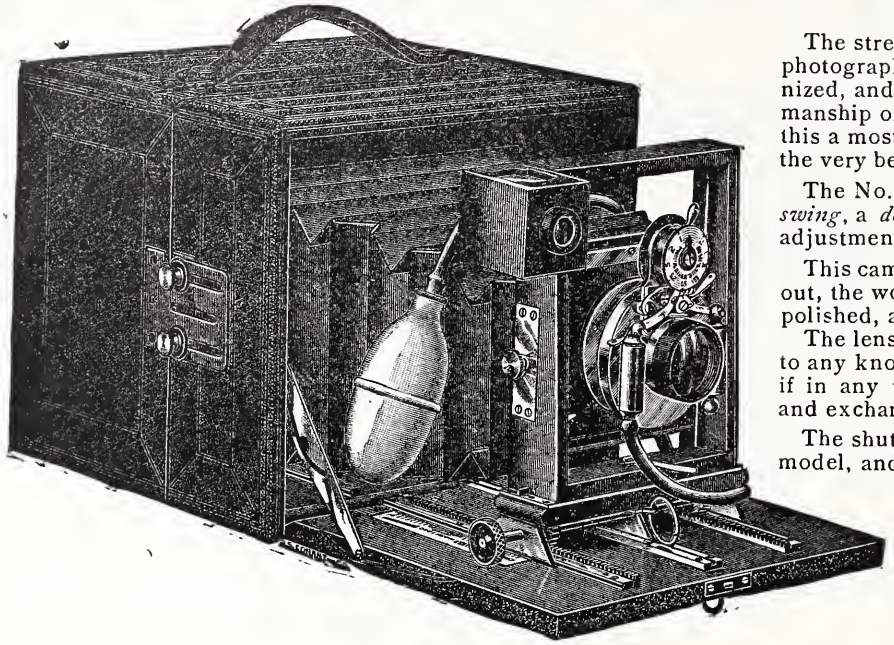
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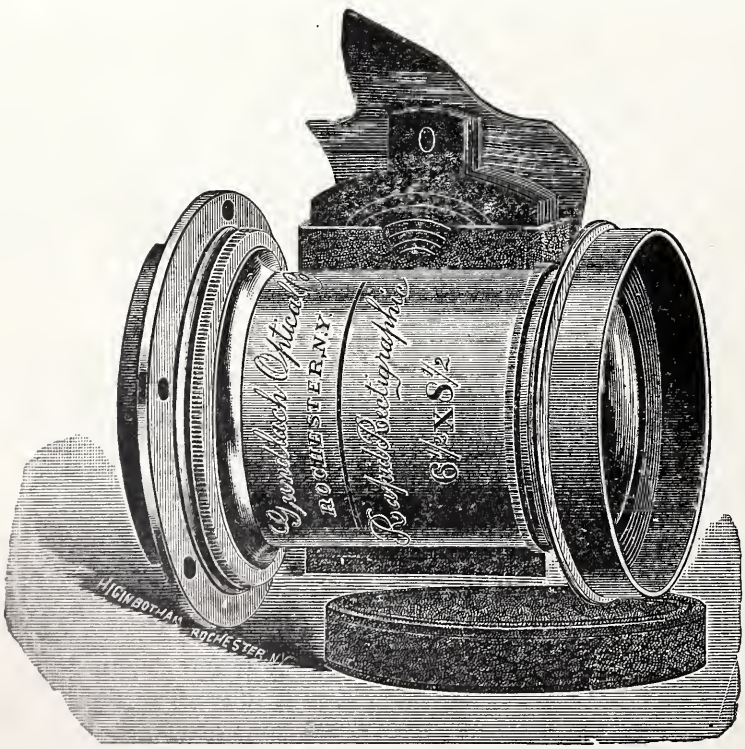
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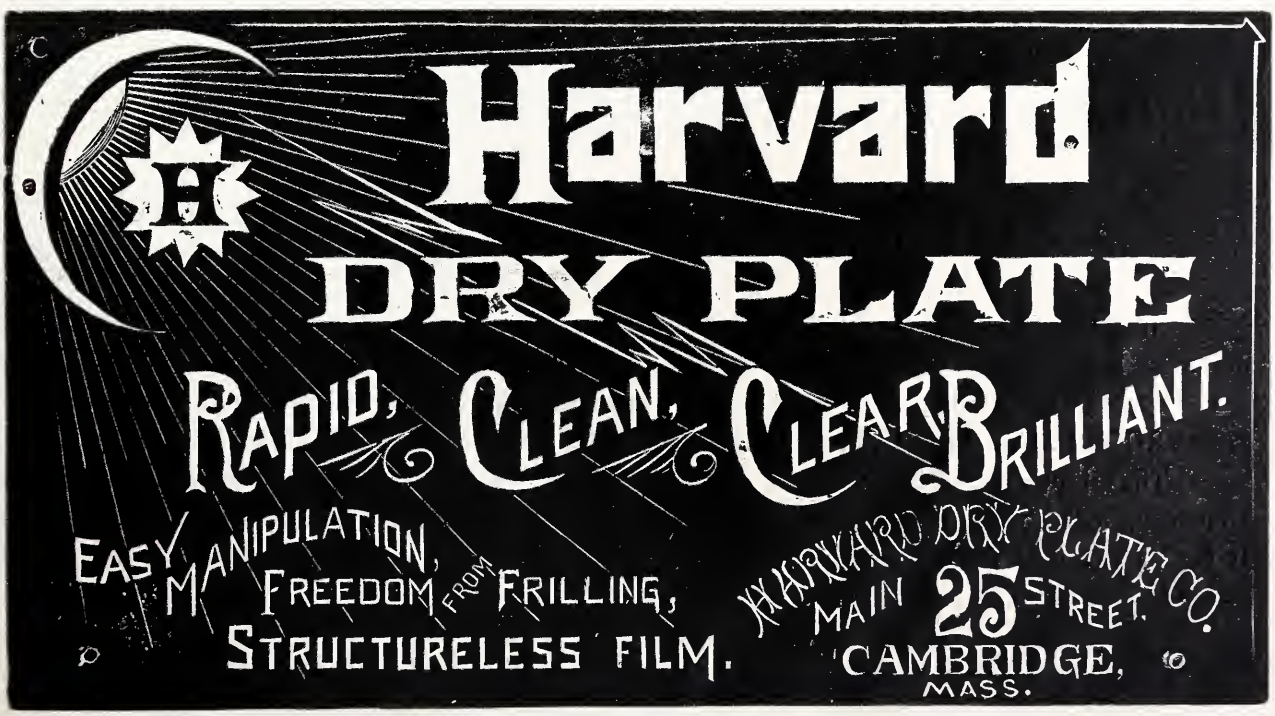
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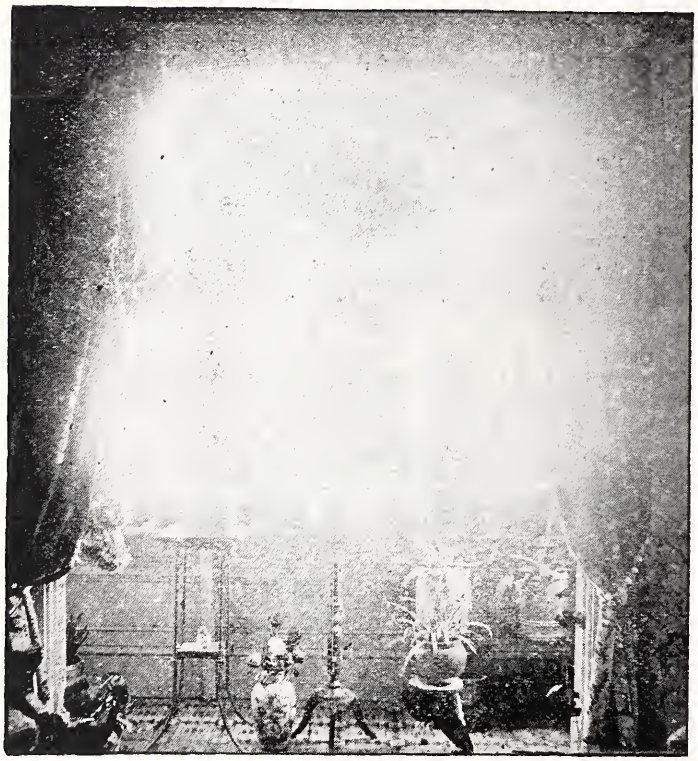
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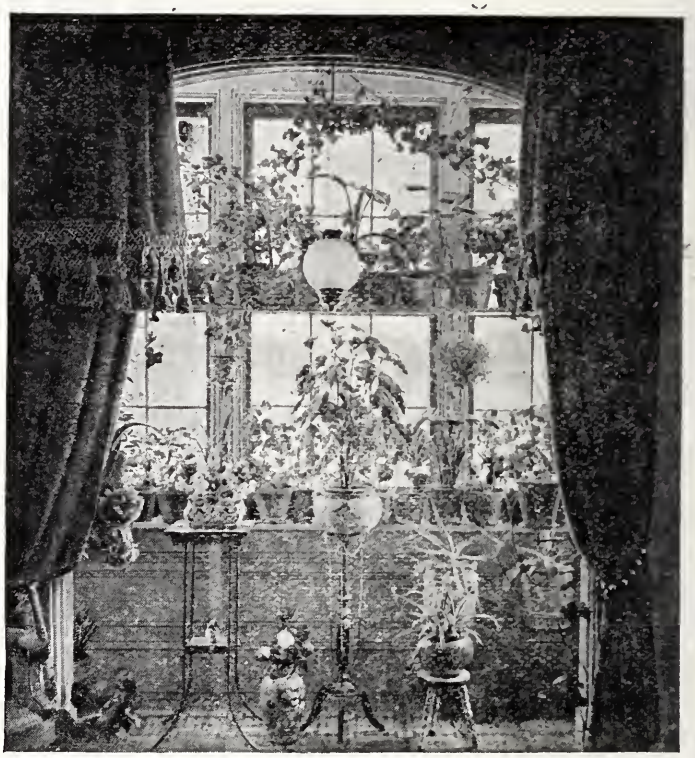
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Yours truly
Edwin Booth

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JUNE 16, 1893. No. 613.

EDWIN BOOTH.

WE present our readers this week with an excellent likeness of America's greatest tragedian—Edwin Booth, whose recent death will considerably enhance the interest and value of this picture. The portrait and reproduction were both made by F. Gutekunst, of Philadelphia. Both have been especially admired by the friends of the great actor.

Edwin Booth, named Edwin Thomas, after Edwin Forrest and Thomas Flynn, two friends of his father, the famous Junius Brutus Booth, was born at Bel Air, Md. When Edwin was quite a young child he became his father's traveling companion in professional tours, and in the course of one of these journeys made his first appearance on the stage. It was at the Boston Museum, September 10, 1849, in Cibber's version of *Richard III.*, the lad taking the part of *Tressil*. The elder Booth was inclined at first to discourage the dramatic aspirations of the youth, but after the performance of this part, he gave him every encouragement. Edwin persevered in his studies, and, still remaining with his father, appeared in various cities as leading support. Once, during a sudden illness of his father, he promptly took the place of the elder tragedian, and acted his father's greatest part, *Richard III.* His effort was so successful that he at once attracted the widest attention. It was at his father's suggestion that he attempted the part of *Hamlet*, which latter became his most popular role.

Mr. Booth traveled extensively in this country, as well as making an extended Australian trip, acting a large repertoire of parts. He was the founder of Booth's Theatre in New York, which, under his management produced some of the finest dramatic representations ever seen in that city. He was compelled to sell the building, however, to satisfy his creditors, and had to begin life over again, which he did with the same quiet courage which characterized his whole career. In the course of time he discharged all his obligations, and accumulated another fortune. He made a tour through the South, which amounted almost to a triumphal progress. He re-visited San Francisco, acting there over eight weeks, and drawing nearly $100,000 of total receipts. He visited Great Britain in 1880 and again in 1882, and in a London engagement alternated with Henry Irving the characters of Othello and Iago. In the autumn of 1882 he made a tour of Germany, being everywhere received with the highest marks of appreciation. His latter years on the stage were spent in connection with Lawrence Barrett, the two great tragedians acting alternating parts.

Mr. Booth has acted many parts, but of late his repertoire was limited to Hamlet, Iago, Othello, Brutus, Shylock, Benedict, Pertuccio in "The Fool's Revenge," and Richelieu. An edition of these plays, with a few others, the text cut and adopted by himself, for stage use, was published by him in 1878. In 1888 Mr. Booth presented to the Players' Club of New York the completely furnished house on Gramercy Park which has since been their headquarters. His own apartments have been on the third floor of this handsomely furnished house.

The grace and concientiousness of Mr. Booth's acting is too well known to require any comment. His wonderful insight into the characters which he portrayed, and the faithfulness of their presentation, is familiar to all theatre goers of his time. His long and honorable career as an actor and a man, gave him popularity possessed by no other actor in the United States. As an exponent of dramatic art he has been accorded a position in the very first rank of tragedians, equalling his famous father in many parts, and even surpassing him in some.

AMMONIUM HYPOSULPHITE.

A FRENCH writer, Mons. Leon Lalane, chemist at the Review High School, has of late directed considerable attention to the use of ammonium hyposulphite as a fixing agent.

We believe Spiller was the first to recommend this substance in preference to hyposulphite of soda. In the *Photographic News* of 1868—twenty-five years ago—we find an article by this clever photographic chemist, in which he says: "from my limited experience of the hyposulphite of ammonium made in small quantity, I consider that its advantages in use, if substantiated by further investigation, would justify the manufacturer turning his attention to the substitution of ammonia for soda in preparing a commercial article. The facility of crystallization, permanence, and other properties of the new salt will have to be determined, and if it can be introduced cheaply into commerce, it is likely to prove a great boon to photographers."

The apparent advantages of the ammonium over the sodium hyposulphite appear to be chiefly in its extreme solubility. The bath can thus be prepared in the shortest time and a very little washing suffices to entirely eliminate it from the prints. Other advantages are that it keeps better, and if any deposit forms, filtration suffices to leave the efficiency of the solution unimpared.

The composition of ammonium hyposulphite would probably be expressed by the formula

$$NH_3S_2O_3 + 5H_2O.$$

Liesegang, in the *Photographisches Archiv*, gives a method of preparing it by mixing equal parts of hyposulphite of sodium and chloride of barium in solution producing a precipitate of hyposulphite of barium. This is treated with carbonate or sulphate of ammonium producing a solution of hyposulphite of ammonium. In commerce the salt is in the form of crystals, which should be white, and when dissolved leave no sediment. In the dry state these crystals will keep for a considerable length of time in yellow and well-stoppered bottles.

Charles Hernitta, writing in the *Revue de Photographie*, says that the ammonical vapor given off by the ammonium hyposulphite can be obviated by the addition of chlorate of potash. This does not, however, apply to all samples of the new hypo that are prepared, it varying considerably in quality. He recommends the following bath:

Water.....	1 litre
Ammonium hyposulphite.....	150 grammes
Chlorate of potash.....	10 grammes

Negatives fixed in this solution are said to be beautifully clear, and in the quantity given alone, some fifty or sixty half-plates, can be safely fixed. One hour suffices for washing.

Apparently the conclusions we must arrive at, are that ammonium hyposulphite is decidedly superior to sodium hyposulphite as a fixing agent; but its cost renders its use practically impossible. We have been unable to discover the cost of this salt in this country; it seems to be comparatively unknown. In England we understand the price to be about 3s. (72 cents) per pound. However, it is possible, like many other substances, that this price will be considerably reduced directly there is a large demand for it, and it is to be hoped that some large firm of manufacturing chemists will take the matter up with a view to supplying it at a reasonable rate. It is doubtful, however, if it will ever be brought down to as low a price as our old friend hyposulphite of sodium.

Since writing the above we have had a conversation with a representative of a large firm of chemical manufacturers, and he gave it as his opinion that the ammonium hyposulphite could never be manufactured at a price anywhere near that of the sodium salt. The latter is now obtained in such large quantities as a bi-product, and the demand for it so great for various purposes of which photography is about the least, that it can be sold at a very small price. On the other hand ammonium hyposulphite would require to be specially manufactured, and the process rather an expensive one. Moreover, the demand, however great, if for photographic purposes alone, would never serve to cheapen its production to any material extent.

INTENSIFYING GELATINE PRINTS.

VARIOUS processes for developing slightly printed gelatino-chloride prints have recently been recommended. When the dark days come upon us a perfect process of this kind will probably be welcome, for by it's means we shall be able to make a larger quantity of prints from each negative during the day and develop them in the evening. Another use for such a process, however, lies in the power of intensifying prints which have by accident or carelessness been removed from the frames before the printing had arrived at completion. In such a case we should probably relegate it to the waste box, thus losing all the time and trouble that has been expended upon its production. By intensification by physical development we can, however, strengthen the image to the required density. The *Photographisches Archiv* suggests a way that is simple and efficient. The under exposed print on

gelatino or collodio-chloride paper, is fixed, dried and placed in a solution containing hydroquinone, tartaric acid and silver nitrate. The proportions of these ingredients can be varied ; it is only necessary to add sufficient acid to prevent any reaction between the hydroquinone and the silver. A few drops of ammonia are added in order to neutralize it. The effect of such a solution is a slight deposition of silver on the image. The deposition can be increased by the addition of more ammonia to the solution.

In place of hydroquinone other developing agents can be used. It is, however, indispensable that the print should have its gelatine surface well soaked with water before the solution is applied, otherwise instead of acting as an intensifier of the image the silver will most likely be deposited on it is a powdery form.

EDITORIAL NOTES.

Who is going to make the largest photograph in the world? This is apparently the question of the day. First we heard of the London Autotype Company's 8 x 4 feet carbon picture that was going to be exhibited at the Chicago exhibition. This was soon knocked on the head, however, with the Australian fourteen feet photograph. Just as we are congratulating ourselves on at last settling this important question, we hear of a picture fifteen feet long printed on one sheet of aristotype paper.

The *Photographic News* growing facetious on the subject, thinks that the next thing we shall hear of will be, that a photographer has whitewashed the side of his house with silver chloride, cast the image from a negative upon it with a lantern and developed and fixed the picture by the aid of a couple of fire engines.

But the photographs we have mentioned and even the suggestion of our worthy contemporary are entirely knocked into nothing by the news which it is stated has been received by the French Geographical Society. This is that a Dr. Piassatzky, during his travels on the Transcaspian Railway, between Ongun-Ada and Samarcand, has secured a photograph 433 feet long ! ! There seems something wrong somewhere in this information.

The latest "marvelous invention" reported by the lay press consists of a parachute camera specially designed for obtaining photographs of fortifications and of the camps of the enemy, although pictures may also be made for general surveying purposes. The camera is attached to the parachute which is fired up by a rocket. The shutter works by clockwork. We are informed that "a swinging motion can be given the camera by the operator and this will enable him to obtain successive pictures over a wide area." Has the inventor tried this, we wonder, or has he only the idea that it will. We can well remember our own experiments in ærial photography, and even when using a shutter working in the $\frac{1}{500}$th part of a second, every possible means had to be resorted to to keep the balloon perfectly steady. The slightest movement was sufficient to render the whole indistinct, what the result would have been had we purposely swung the camera we never tried to find out, but we can well imagine it.

The Parisian Photographers' Benevolent Association has hit upon a novel idea for raising funds. Whether it is likely to be a successful one is perhaps open to doubt. The idea is to photograph the actors at intervals during a performance and afterwards while the photographs are projected on the screen with the lantern, a good elocutionist stationed behind reproduces the dialogue.

The editor of *The British Journal of Photography*, in a note entitled "Peculiarities of American Journalism," criticises our ways of doing things in this country. His note begins as follows :

"*The American Journalists have a neat way of imputing to their rivals any departure from such a branch of ethics as takes cognizance of the coincidence of phrase with fact.*"

[If you fail to understand this statement on the first reading, read it over again, slowly, and perhaps the learned editor's meaning may finally dawn upon your benighted American mind.]

Evidently, a peculiarity of British journalism—at least the journalism of *The British Journal of Photography*—is to use as many and as high sounding words as possible to express a simple statement in the most roundabout manner conceivable.

The well-known effect, seen in photographs of lightning, of "ribbon flashes" has recently had a suggested explanation by Mr. H. E. Russell, F.R.S. Observing the effect of distortion in photographs of street lamps where the image came near the margin of the plates to produce crescent shaped specs he imagines that the thin line of lightning is widened in a similar manner and so a thread-like line made into a ribbon.

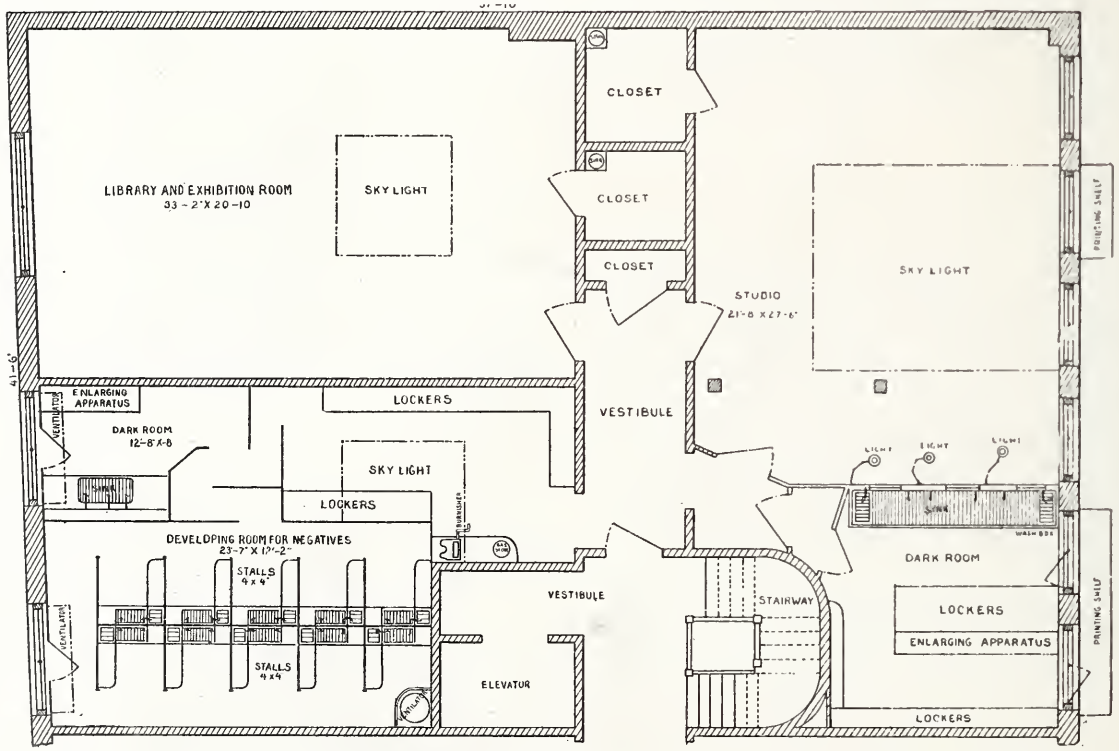
THE BOSTON CAMERA CLUB.

IN days of yore when knights of the camera were compelled to go around with one or two hundred pounds weight of apparatus and a small house to do the work in, it is not to be wondered that amateurs, or those who did it merely for the love of the thing, were few and far between.

Now, however, when everything has been so simplified that a knowledge of the mechanical part of the photographic art can be acquired in a few easy lessons, and when the apparatus has been so reduced in bulk that its weight is calculated in ounces, it is not surprising that a reaction has taken place and amateurs have sprung up all over the country. Naturally it was not long before societies were formed and meetings held where all who had taken up with the art either as a pastime or as a business could meet—swop lies—as Mark Twain would put it, and assist each other as much as possible.

Between the years 1875–1885 the growth in popularity of the photographic art was very rapid, and it is to this period must be referred the origin of the Boston Camera Club which it is our intention to give some account of, feeling sure that the growth and present state of this well-known society will be of interest to our readers.

The Boston Camera Club was originally organized as the Boston Society of Amateur Photographers. Although the Philadelphia Society antedates it in time, yet the Boston Society is probably the first society organized distinctly for amateurs, as the former on formation consisted chiefly of members of the profession. Writing of the early history of the club, Mr. Benjamin Kimball, in the *New England Magazine* says: "Like other great achievements in the world's history, the credit of having originated the Boston Camera Club is contested by several, all of whom, however, have done great service in its development The time was ripe, and the movement manifest at first in several quarters finally took shape by a union of all agencies working together in the common cause.



PLAN OF THE BOSTON CAMERA CLUB ROOMS.

It is certain, however, that throughout the year 1881 several groups in Boston were meeting together, talking over various methods in the art, and comparing results. One of these groups at last resolved upon organization, and upon the evening of October 7, 1881, met for the purpose. Those present were Messrs. John H. Thurston, who had been most active in the cause, F. H. Blair, James M. Codman, Lucius L. Hubbard, W. C. Greenough, A. P. Howard and Fred'k Ober."

"These gentlemen at their first meeting adopted the name of the Boston Society of Amateur Photographers, considered a draft of constitution, and elected temporary officers; and this date must be considered as the birthday of the Boston Camera Club."

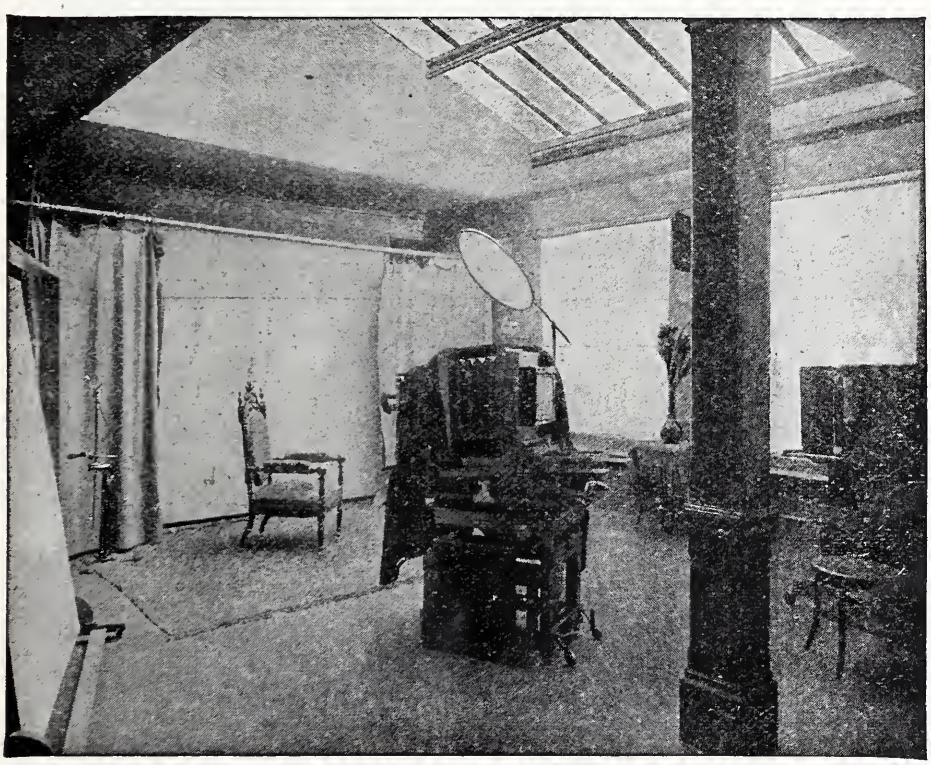
Meanwhile other gentlemen were working in the

same line, and at the Tremont Street studio of the well-known photographer, Mr. Marshall, and at other places were held several meetings for discussion and practical work. In this group, among others, were Messrs. William T. Brigham, Prof. James F. Babcock, William A. Hovey, and Wilfred A. French. In the issue of the *Evening Transcript* of November 9 Mr. French gave notice that a society was to be formed, and asked the co-operation of all amateur photographers. Naturally the two lines met, and at the regular meeting of the Boston Society of Amateur Photographers, held November 18, 1881, there was a coalition. Prior to this meeting the officers had been temporary, and the following were then elected as the first permanent officers: President, W. T. Brigham; Vice-President, James F. Babcock; Secretary and Treasurer, J. H. Thurston. Its constitution declared as the object of the society "the advancement among its members of the knowledge of photography in its various branches by the aid of discussions, lectures. experiments and such other methods as may be deemed best."

From this time the improvement of the society was very rapid. Although it had no place of meeting at its disposal, many photographers lent their rooms and considerable energy was displayed by all, lectures and demonstrations were given and in November, 1883, the first exhibition was held at the rooms of the Institute of Technology. More than seven hundred prints were shown and the whole was voted a decided success.

It very soon became apparent that the child had outgrown its cradle. The number of amateurs was so rapidly increasing as to necessitate the renting and fitting up of permanent club rooms. The annual fee, which at first was only five dollars, was increased to fifteen, and rooms at No. 50 Bromfield street, the present local habitation, were engaged. The name of the society was also changed to the Boston Camera Club.

The rooms at Bromfield street, in the heart of the city, have been from time to time enlarged and improved until they are now probably as complete as any in the country. A glance at our first illustration will give some idea of their completeness.

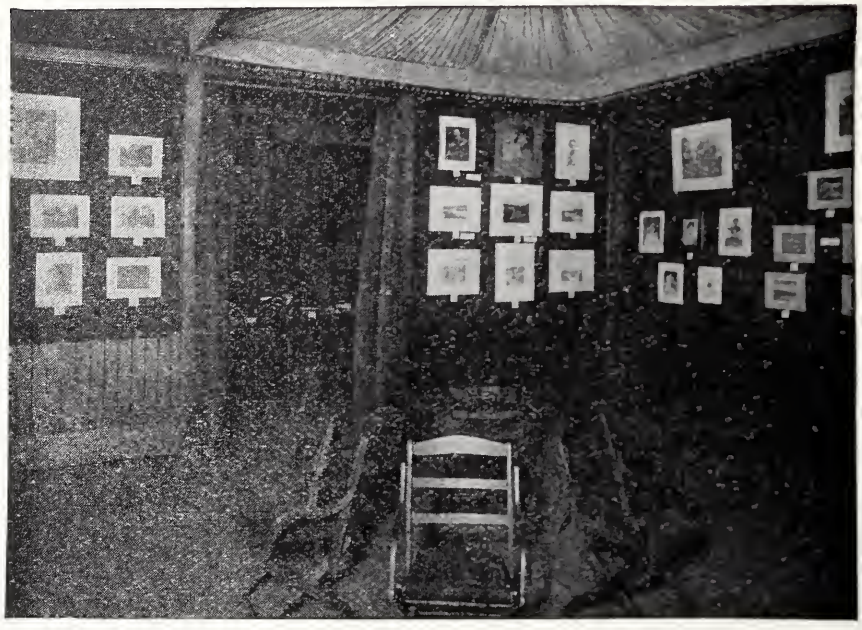


Boston Club—The Studio.

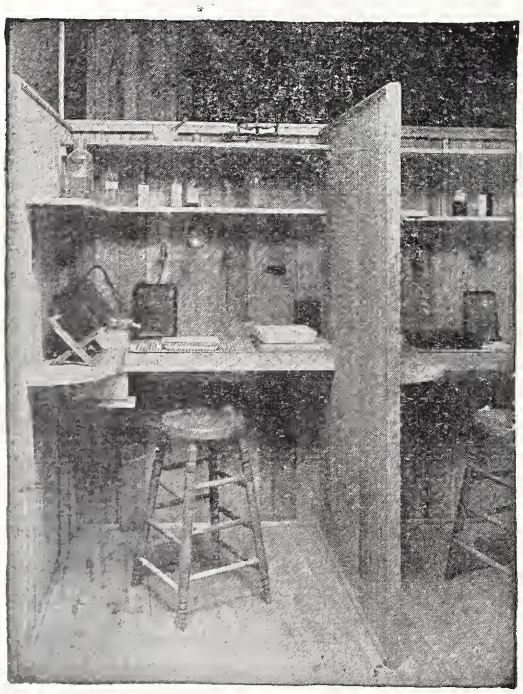
Passing through the entrance hall, we enter a large room about twenty by thirty-five feet. This is divided by a screen partition into a square exhibition gallery. This gallery is admirably lighted by rays coming through a large skylight diffused by a reflecting cone, and here the club exhibitions are held. On the opposite side is the studio, a room about twenty-five feet square with a west exposure. A large portion of the roof is glazed admitting an abundance of light, but this can be controlled completely by means of large curtains. There is also ample side light admitted by the large windows of the room. The studio is completely furnished with all the paraphernalia neces-

sary, scenic, plain and graduated backgrounds and accessories of all descriptions. Two cameras, the property of the club, are kept constantly in use. They are capable of making pictures any size up to 11 x 14 inches. The club is rich in the possession of no less than three dark-rooms. The old dark-room erected in the early days of the society is still the favorite of many of the older members. The new dark chamber is fitted up with all the latest improvements and conveniences. These rooms are extensively fitted up with private lockers of the members for stowing away their chemicals, apparatus, etc.

The old dark-room contains space for three working together in their little stalls, while the new one will accommodate ten. One of these new stalls we have an illustration of. Electric lamps screened with red porcelain shades, are at the control of the operator and each stall contains a sink, faucets, baths and washing box.



BOSTON CLUB—A CORNER OF THE EXHIBITION ROOM.



BOSTON CLUB—STALLS IN NEW DARK-ROOM.

The third dark-room is reserved for the use of the enlarging and reducing camera with two 15-inch condensers and electric arc light. This arrangement is so fitted, however, that daylight can be used if desired.

We understand that the Boston Camera Club is greatly indebted to the artist painters of Boston for encouragement and assistance. They have acted frequently as judges at exhibitions, giving much care to the work and have frequently given lectures to the club, of considerable interest and value.

We cannot but acknowledge that it is to the amateurs principally that we are indebted for the majority of modern inventions and improvements, both in apparatus and processes. The busy professional, worried with under-paid work and in many instances momentary troubles, has no time to give to experimentalizing and effecting improvements. It is to the wealthy and independent amateur that we look to for the future, and judging from the previous energy and ability shown by the Boston Camera Club, this society does not intend to play the least part in the march of improvements, in the future.

COMPOSITE HELIOCHROMY.

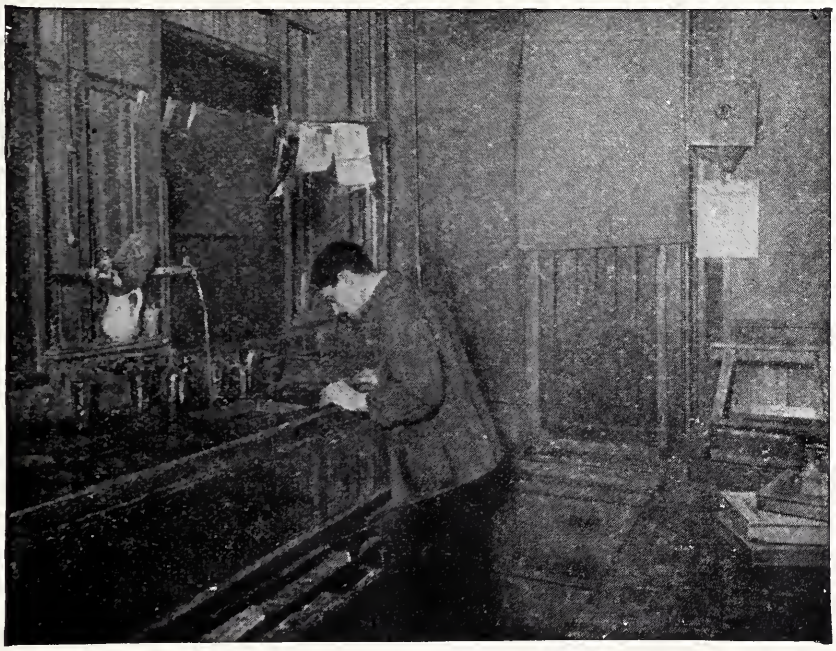
(*Continued from page* 301.)

ANOTHER apparent defect is that, if the transparent mirrors have parallel plane surfaces, they will, if clear, give a doubled instead of a single image. This defect can be removed by making the mirror 4 of canary yellow glass, which transmits both red and green light freely, but destroys all the blue-violet light that is not reflected from its first surface; and the mirror 2 of a cyan blue glass, which freely transmits both green and blue-violet light, but destroys all red light that is not reflected from its first surface. This method of correction is objectionable because it reduces the intensity of illumination by nearly one half. The method I have adopted is to use thin glasses having the two plane surfaces inclined to each other just sufficiently to make the two reflected rays coincident at *D*. Another apparent defect is found in the fact that the amount of light reflected from the plane glasses used as transparent mirrors varies with the angle of incidence. With the arrangement shown in the diagram, the top of the image of the red sensation will appear brighter than the bottom, and the outside of the image of the blue-violet sensation brighter than the inside. The disk of light seen in the heliochromoscope—when the chromogram is absent and the instrument directed toward a white sky—will be white only in the centre, the outer portions showing a delicate tint of blue on the one side, yellow on the other, pink at the top, and green at the bottom. This defect has been removed by the simple expedient of inclining the color screens, so that the stronger ray passes diagonally through the colored glass and the weaker ray straight through.

The mirrors are attached to brass supports, and are adjustable by small screws pressing them against the springs by which they are held in place. But the adjustment is such a nice matter that a twentieth of a turn of a single screw, having 56 threads to the inch, would make the instrument useless until it had been readjusted.

One of the cameras I use for making the chromogram negatives is a converted heliochromoscope, the eye-piece serving as an objective, projecting an image that includes white light.

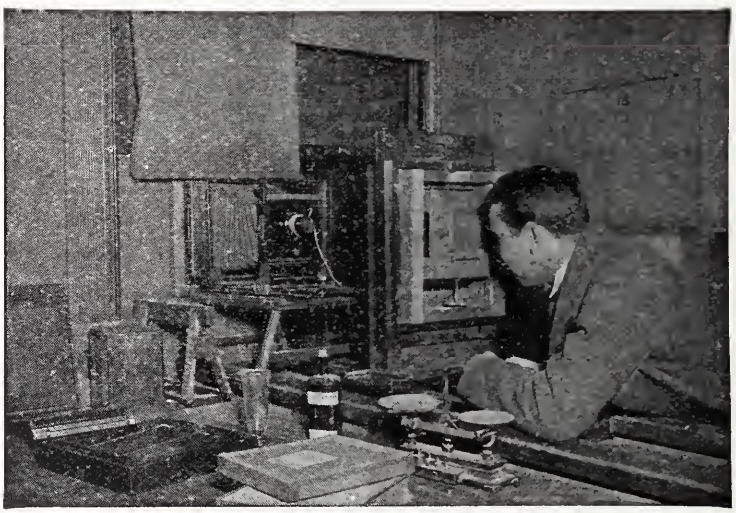
An optician will readily see, in the instrument as described, various apparent defects, none of which, however, are evident in the instrument as constructed. In the first place, in the absence of color-screens, the image of the green sensation, formed of light reflected from a central silver mirror, is much more brilliant than the other images, formed of the weaker portions of light reflected from the central transparent mirrors, which are unsilvered, plane-polished glasses. But the band of pure green light in the spectrum is very much narrower than the bands of red and blue-violet, and this apparent defect is, therefore, in reality, an advantage, because it permits of the use of a screen that transmits the light of only a very narrow band of spectrum green, instead of the broader band that would otherwise be necessary to make up nearly 50 degrees angle of view. It may be readily



BOSTON CLUB—THE OLD DARK-ROOM.

reconverted into a heliochromoscope by substituting a chromogram holder and *pure* color screens for the plate holder and *selective* color screens. In this instrument, transparent axial mirrors are used for the images of the green and blue-violet sensations, and a pair of silvered mirrors for the image of the red sensation, because the latter image must be made many times brighter than the others on the sensitive plate employed. This is a more compact and convenient form of camera than any other that I have devised for this purpose, but the aperture of the eye-piece is so small that it is necessary to give very long exposures—up to ten minutes on well-lighted landscapes with ordinary isochromatic plates.

When circumstances do not admit of the longer exposure, I use another form of camera in which the mirror system is arranged in front of three separate objectives. This camera, in comparison with the compact inverted heliochromoscope, is somewhat clumsy, and includes a smaller angle of view, but has an effective aperture of about f.16 for the image of the red sensation, and requires not more than thirty seconds exposure for objects illuminated with clear sunlight.



BOSTON CLUB—MAKING LANTERN SLIDES.

I now come to the consideration of the defects of the system as a means of reproducing the colors of nature. One of the greatest photographic authorities has said that no method depending upon the production of photographic negatives by known processes can possibly be made to secure accurate reproductions of color, because no known photographic negative-making process will accurately reproduce monochrome light and shade. This statement is strictly true, and the fact must not be ignored, even though the defect referred to affects the success and value of color photography scarcely more than it does the success and value of monochrome photography, which can be made to give reproductions of the majority of monochrome subjects, good enough to be generally accepted as true *fac-similes*.

In monochrome photography the contrasts in the middle shades of a correctly exposed negative are always more or less exaggerated, at the expense of both ends of the scale. The positive print from such a negative will, upon critical comparison with the original, appear more or less weakened or bleached in the lighter shades, and heavy in the shadows, with undue contrasts in the middle shades, especially if the original shows strong contrasts of illumination. In composite heliochromy, the same defect must evidently be present, making colors appear as if slightly faded in the lighter shades, and dull in the deep shadows, with undue strength and contrast in the middle shades. This defect is seldom noticeable in reproductions of evenly-illuminated objects, when photographed upon the highly sensitive and soft-working photographic plates available for this work. The defect, however, may be offensively evident in reproductions of objects showing strong contrasts of illumination.

Another consequence of the same defect in the photographic negative-making process is undue intensification of the stronger elements of mixed colors in the deeper shades of the picture. For example, an orange which is a mixture of four parts of red to one of green (physiologically), if it act with exactly four times the force in producing the negative of the red sensation that it does in producing the negative of the green, will be represented by more than four times the density of deposit, in case only a moderate exposure be given (because the density is always disproportionately great in the middle shades of the negative), and will, therefore, be reproduced as a slightly redder orange than it really is. A full exposure corrects this defect, and an excessive exposure, by bringing the green element into the middle shades of its negative, and the red element into the high lights of its negative, either reverses the defect, making the orange too yellow, or in case it is originally impure (*i. e.*, mixed with a small proportion of white light), may even produce a suggestion of brick-red in the reproduction.

This defect is not as serious as might be expected, because it is really only an exaggeration of effects produced upon the eye in ordinary vision, by corresponding variations in the illumination of

the object, for which the judgment, from mere force of habit, instinctively makes allowance. In this connection I quote from Rood as follows:

"Colored surfaces undergo changes of tint when they are seen under a very bright or a very feeble illumination.....The violet of the spectrum is easily affected; when it is feeble, that is, dark, it approaches purple in its hue; as it is made stronger, the color changes to blue, and finally to a whitish grey, with a faint tint of violet-blue. The changes with the ultramarine blue of the spectrum follow the same order, passing, first, into sky-blue, and finally into white. Green, as it is made brighter, passes into yellowish-green, and then into whitish yellow; for actual conversion into white, it is necessary that the illumination should be dazzling. Red resists these changes more than the other colors, but, if it be made quite bright it passes into orange and then into bright yellow.....Color sensations, which are due to the joint action of two sets of nerves, speedily diminish when the color is darkened, and are replaced by the primary sensations—red, green, or violet. The sensation of orange is produced by those light waves in the spectrum which have a length such as to enable them to stimulate the red nerves strongly, and the green nerves to a lesser degree; hence, when orange-colored light is made very weak it fails to act on the green nerves, while feebly stimulating the red. For similar reasons the sensations of yellow and greenish-yellow pass into green, as do also those of greenish-blue and cyan-blue; in the same way, the sensations of blue, ultramarine-blue, and violet-blue pass into violet."

In short, we have in this color photography imperfect rendering of the relative intensities of color in the different shades of the picture, corresponding to the imperfect rendering of gradations in monochrome photography, and also exaggerations of the visual effect of varying intensities of illumination upon colors, due to the same defect in the negative process.

(*To be continued.*)

THE ART AND PRACTICE OF GELATINO-CHLORIDE PRINTING.

(*Continued from page* 306.)

PART I.

The Manufacture of the Paper.

Chapter IV.

Preparation of the Emulsion.

With regard to our own experiments in the manufacture of gelatino-chloride emulsion, we prefer a modification of the Barker's formula and the addition of certain substances to better preserve it. This formula has been tried by many persons who have acquainted us with their success. We have therefore no hesitation in recommending it. It gives a paper especially suitable for weak negatives, as it is rich in silver. If required for brilliant or hard negatives, use only 5 grains of ammonium chloride and 5 grains of silver nitrate. It consists of

Water	8 ounces
Silver nitrate	¼ ounce
Rochelle salts	20 grains
Ammonium chloride	10 grains
Alum	50 grains
Citric acid	1 drachm
Gelatine	1 ounce

Take one of the porcelain jars, thoroughly clean it, and put in the gelatine and six ounces of water. We will take the opportunity here to point out the necessity for cleanliness in all the operations. Dirty jars or anything else in an unclean state are almost certain to produce failures. All other chemicals save those required should be kept as far away as possible.

In a glass beaker put the silver, citric acid and one ounce of water and in another the alum, Rochelle salts, ammonium chloride and another ounce of water.

As soon as the gelatine is *thoroughly* soaked the jar is placed in the saucepan which is then filled with warm water and placed on the gas stove or over a slow fire until the gelatine is all dissolved. The dissolving point of gelatine is about 90 deg. Fahr., and it should not be made too hot as a gelatine solution at a high temperature loses its setting properties. It should never be allowed to exceed 120 deg. Fahr., when the whole of the gelatine is dissolved the solution containing the salts is added and well mixed up with a glass rod.

The next operation is the addition of the silver, and with this our emulsion is complete. It must, however, be remembered that in doing this we form a compound sensitive to light, so that this operation must be conducted in gas, or yellow light. It should be pointed out that the emulsion, when, as a heated solution, is more sensitive even than when coated.

The addition of the silver is one of the, if not the most important operation in the whole process, and requires a little care. It is very necessary that the addition should be made slowly, and for this purpose some operators prefer to pour the solution into a dropping bottle and add it drop by drop. Another method is to place it in a bottle containing two thin glass tubes, one drawn out to a point and broken off at the end. By means of an arrangement of this kind the silver can be blown in in a fine spray.

It will be found on adding the silver that the emulsion turns a milky white. The whole should be violently stirred to prevent the silver chloride from precipitating to the bottom and to thoroughly mix the separate ingredients.

The temperature of the emulsion should now be taken, and if below 110 deg. it should be warmed up to that point.

The next consideration is the filtration. This is accomplished by pouring through a piece of fine muslin, or a flannel jelly-bag, into another jar cleaned ready for its reception.

Walter E. Woodbury.

(*To be continued.*)

Correspondence.

TO THE PHOTOGRAPHERS OF AMERICA.

Greeting:—I am requested to say a word in reference to Convention attendance, though it goes without the necessity of advance argument that this 1893 Convention of Professional Photographers will be the most numerously attended in all its history.

I will venture to say that no man who to-day is practicing Photography as a means of livelihood, however bright he may be, can properly estimate to its fullest extent the far-reaching beneficial effect, physically and mentally, of a trip to Chicago during Convention week. It will be an investment that will many times return itself to bless and reward the investor in many practical advantages to be gained therefrom. Who knows but that you might get just one idea (you should get several) of such practical importance that would more than repay you for the time and money spent.

It is intended that this Convention shall be a potent missionary, direct from the very fountainhead of Photographic Knowledge, especially for the advancement of ideas to increase your business interests and consequently make of us all more finished workers in the little world in which we move and have our being. No matter how much we may already know we can all learn much more. Example is given by the wisest old heads of ancient and modern times who all keep "schooling."

Almost every one who is any one, as the saying goes, will turn up in Chicago this year, or my word for it, "severely miss it." Aside from the marvelous sights to be seen, sights, too, that it is safe to promise can never be duplicated (at any price) in this life, certainly alone worth a trip to Chicago, is the privilege of seeing those many grand buildings especially erected for the World's Fair, and which represent the grandest development of American building art; so much so that the master-critics of the Old World have all unanimously agreed in pronouncing them to be of modern art the supremest exposition. Here the elastic mind will be accorded the fullest opportunity for the acquisition of a practical every-day knowledge that shall indeed be useful. There will be this year at Chicago the happy combination of circumstances so peculiarly favorable to visit, to meet, and to know, that there is no man who reads these words can afford to miss and then claim that he has done justice to himself, his family and his art. It is the intention of the officers of the Photographers' Association of America to make this Convention an historic and memorable one, with such fulness of liberal photographic "stimulus," that to each participant, long years after the close of meeting, shall flow the feeling of pride and reward.

Come, then, and meet with us; come with your minds open and prepared to absorb the higher learning of our art, a greater readiness to accept new ideas, aye, even more zeal for your profession than you have ever yet felt, and thus help to place upon a higher and surer foundation the Art of Photography.

Hoping then to meet all in Chicago at Convention Week, July 18 to 21, inclusive, where shall be spread out to all those who know a good thing when they see it, a wealth of treasure in the form of Progressive Photography.

I am truly and fraternally yours,

C. T. Stuart,
Vice-President of P. A. of A.

Hartford, Conn., June 1, 1893.

Notes and News.

The Government of Nicaragua adopted the metric system January 1.

Our esteemed contemporary in St. Louis prints a note on page 280 of his June number, in which there are two mistakes. Mr. Kilburn's initials are B. W., not C. D., and he paid $17,000 for the privilege, not $15,000. Even the learned editor of *The St. Louis and Canadian Photographer* sometimes makes an error!

In his lecture and explanatory descriptions of lantern slides of the Hoboken Camera Club, Mr. F. A. Muench says: "The negatives produced by our Society are on Wuestner's New Eagle Dry Plates, from which our good results have been obtained, as these plates are uniform, not apt to frill, and readily developed. We are confident that every one using them will agree with us."

At a meeting of the delegates of the photographic societies affiliated to the photographic society of Great Britain, it was resolved to invite to a conference those gentlemen who have most frequently acted as judges at recent open photographic exhibitions, to agree upon lines of action to be followed in judging and to offer suggestions for the guidance of societies with regard to exhibitions.

The Photographic Convention of the United Kingdom will be held at Plymouth during the week commencing July 3d. There is every prospect of a successful gathering. The Mayor of Plymouth has set aside the law-courts for its use during the week. The Council of the Plymouth Institution has likewise proffered the use of the art gallery attached to the Athenæum Buildings for the purpose of exhibitions.

The proprietors of the magazine *Good Roads* are offering three prizes, one of $50, another of $30, and a third of $20, for the three best collections of not less than three photographs illustrating the need of improved roads in the United States. Pictures are required of rough, rutty and muddy roads in their worst condition, "stuck in the mud photographs," showing the farmer or merchant, with his loaded wagon vainly trying to drive his patient team and load out of the inevitable mud, and other photographs of a similar character. All further particulars can be obtained from Mr. Isaac B. Potter, Potter Building, New York city.

$1,200.00 are offered by the Photo Materials Co., of Rochester, N. Y., for the best prints on Kloro paper exhibited at Chicago during the Convention. The following are the conditions of competition ;

Class A.—First prize, $500.00 ; second prize, $150.00 ; third prize, $100.00. For the best general collection of Kloro prints from three 18x22 portrait negatives ; three 16x20, portrait negatives ; six 14x17 portrait negatives. Class B.—First prize, $150.00 ; second prize, $75.00 ; third prize, $50.00. For the best general collection of Kloro prints from three 14x17 portrait negatives ; six 10x12 portrait negatives ; six 8x10 portrait negatives. Class C.—First prize, $100.00 ; second prize, $50.00 ; third prize, $25.00, for the best general display of Kloro prints from negatives of any size, 8x10 down to 3½x3½ inches.

1. All prints must be made on Kloro Paper, and the original box covers or envelopes, with our labels, in which the Kloro paper was packed, must be shipped with each individual exhibit.

2. The exhibits are to be made at Chicago during the Photographers' Convention, July 18th, 19th, 20th and 21st, 1893, and *must reach Chicago no later than the 17th of July*.

3. No photographer can compete for more than one premium.

4. The contest will be decided by three competent disinterested judges, who will be chosen by vote at the convention.

5. The awards will be made on the excellence of the negative as shown by the print.

6. Prints in all the exhibits must be mounted on cardboard or mounts, with the name of photographer on each print.

7. The Photo-Materials Co., to become the owner of all prints winning premiums, and to have the right of exhibiting them. The other exhibits will be returned at the request of the owners.

Notify us of your entry and we will send you shipping tags. We will arrange the exhibits of those who do not attend the convention. All exhibits to be expressed prepaid to the Photo-Materials Co., care of Secretary, Convention Photographers' Association of America, Second Regiment Armory, corner Washington, Boulevard and Curtis streets, Chicago.

We have received from Bradfisch & Pierce, through Mr. Pierce, Jr., a collection of very fine photographs, made on the B. & P. paper, by Mr. F. C. Halfer, of Marquette, Mich. They are 5 x 8 views of local scenery, and testify equally to the skill of the operator who made them, and the excellent paper employed by him in making the prints.

Photographic Societies.

An International Photographic Exhibition will be held at Bristol from 18th December, 1893, to 22d January, 1894. Full particulars can be obtained from the Honorary Secretary, F. Bligh Bond, 36 Corn Street, Bristol, England.

A Photographic International Exhibition organized by *l'Association des Photographes Suisses* and *la Société Genevoise de Photographie* will be held at Geneva, in the month of August. Particulars from Monsieur C. W. Tenard, Exposition Internationale de Photographie, Genève.

An International Exhibition will be held at the Gallery of Arts, at Hamburg, during the month of October. The Committee seem to thoroughly intend making this exhibition a success. Their object is "to educate and improve the existing artistic taste of the public or to create such a sense where it is wholly absent." "The powerful influence," continues the circular, "which is able to be exercised upon public taste, is in no countries more in evidence than in Great Britain and the United States, where professional photographers are in consequence of the high pitch attained by their amateur brothers of the art, now able to exercise an artistic license with which the uneducated public of the last decade were unable to sympathize, and therefore objected to be associated."

All photographs should be sent on as early as possible, September 1 being last day of receiving. Full information and entry forms can be obtained from Das Austellungs Comitee des Amateur Photographer Verein, Hamburgh, Schwanenwik 33.

Amateur Photographic Society of Madras.—The first Open Exhibition of Photographs will be held in Madras during the month of December, 1893, for one week. All exhibits must be in the hands of the Hon. Secretary by December 1, and all charges for carriage to and from the exhibition must be paid by the exhibitors. All exhibits should be clearly addressed to the Hon. Secretary, Amateur Photographic Society of Madras, of whom full particulars of classes, etc., may be obtained. The following classes are open to the world : Class A.—Silver medal, for the best set of four landscapes ; silver medal for best set of four figure subjects ; silver medal, for best set of twelve lantern slides ; silver medal, for the second best enlargement ; bronze medal, for second best of each of the first three subjects. Open to amateurs only, Class B.—Silver medal, for the best photograph, any subject ; bronze medal, for second best photograph, any subject ; silver medal, for best set of four figure subjects ; silver medal, for best set of four other than figure subjects ; bronze medal, for best set of six lantern slides ; silver medal, for best enlargement ; silver medal, for best set of hand-camera shots ; silver medal, to be awarded by Judges for any exhibit of special merit not included in the above classes.

Picnic Scene.—Laura (to her cousin, who has just kissed her): "Oh, Rudolph, we are lost! There is Mr. Miller!"

Rudolf : "Never mind him; he is a harmless fellow."

Laura : "He was; but now he is an amateur photographer."—*Photography*.

The Editorial Table.

From Mr. W. H. Bartholomew of 18 Spruce Street, New York, we have received some fine proofs of his half tone photo-engraving process. These reproductions chiefly from paintings are among the finest we have seen.

Book News for June has for Philadelphians an added interest in the portrait of Dr. Horace Howard Furness, the detached frontispiece for this number. The "New Variorum Shakespeare," edited by Dr. Furness, has made his name known in every land where Shakespeare is loved. In the sketch of the life-work of Dr. Furness we read of an intended honor to our countryman proposed by the Birthplace Trustees of Stratford-on-Avon, at their last annual meeting in May.

"The Kodak at the North Pole," by Lieut. R. E. Peary, U. S. N., Eastman Kodak Co., Rochester. A bright little booklet describing and illustrating Lieut. Peary's work with the Kodak up in the arctic regions when on his search for the North Pole. The Eastman Co. are exhibiting at the World's Fair the No. 4 Kodak used by this gallant explorer, also a few bromide enlargements made from his negatives showing some interesting pictures taken on the 1,300 mile sledge journey across the wind swept wastes of northern Greenland.

"The Scientific Expert in Forensic Procedure," by Prof. Charles F. Himes, Ph.D. of Dickinson College, Carlisle, Pa. This is a reprint of an important lecture delivered by Prof. Himes before the Franklin Institute. The position now held by the scientific expert in forensic procedure is one of ever-increasing importance. This little pamphlet explains and deals thoroughly with his present position and future. "The scientific expert," says the author, "is simply a product, and an extreme product of an advanced and rapidly advancing civilization." No class is, however, more frequently misunderstood or abused, and the importance of his testimony on the administration of justice is often entirely ignored. Prof. Himes gives many instances of this, and it is to be hoped that this able lecturer will produce the desired reform in this direction. Prof. Himes, it should be noted, will read a paper at the World's Congress Auxiliary on "Photography as an aid to Education."

Record of Photographic Patents.

498,396. Photomechanical printing. William Kurtz, New York, N. Y.

498,963. Camera Shutter. William F. Torrey, Providence, R.I.

TRADE MARKS.

23,180. Photographing. Artists paper used for Diamond Aristotype Co.

Queries and Answers.

78 NEBRASKA.—I have purchased blue paper, but as there is no direction how to tone and fix it, apply to you for information.

78 *Answer.*—Blue paper is fixed in pure water only. When completed, the print is removed from the press and washed in pure water, till the picture is perfectly well-developed, and stands out with a beautiful blue tone upon a white ground.

When the water dripping from it ceases to be of a yellow tinge, the operation is completed, and the result is a permanent and durable picture which is not affected by light and but little by atmospheric influences.

If a blue print is inadvertently made too light, it can be intensified by immersing it for a few minutes in a solution of ferric chloride, U. S. Pharm. 1 drachm and water 32 ounces. Finally wash again.

79 SOLIO, Mo.—1. How long will amidol keep in solution?

2. Does it gradually lose energy as it gets darker?

3. Is sulphite of sodium, neutralized with sulphurous acid water, as good for mixing developer as the neutral?

4. What strength should acid water be?

5. Where can I get neutral sulphite and what is the price?

6. Does amidol work slower, and with more contrast, after being used once?

79 *Answer.*—1. With proper precautions as long as any other developer of the same kind. The solution should be kept as much as possible from the direct influence of air, and the bottle containing it filled up to the cork. To do that, we have recommended a very clever little device proposed by a German photographer: As soon as an ounce or half an ounce of the solution is taken from the bottle, fill up again with little pebbles, or broken pieces of glass, or anything like it. The bottle will in this manner remain filled up to the cork and air cannot act upon the solution.

2. On account of the great solubility of amidol, its solution remains uniformly active, even if it has turned to the color of claret wine.

3. Mostly all the commercial sulphite of sodium contains much carbonate of sodium. The effect of adding sulphurous acid is simply a neutralization of the alkali, consequently a neutral salt.

4. The sulphurous acid water prepared by The Scovill & Adams Co. is charged with as much sulphurous acid as water will absorb, 40 per cent. of it, if we are not mistaken.

5. The Scovill & Adams Co. expect a perfectly pure article in a very short time.

6. Amidol partly oxidized loses some of its energy.

I ANNOUNCE to my Chautauqua friends and others the death of my wife, Elizabeth, who departed this life Saturday, June 10th, firm in the faith of her Redeemer and true to the tenets of Chautauqua.

Charles Ehrmann.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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KIDDERS, N. Y., May 29, 1893.

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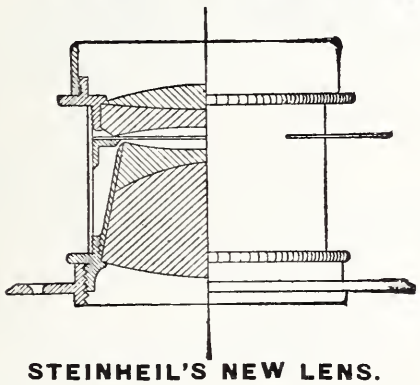
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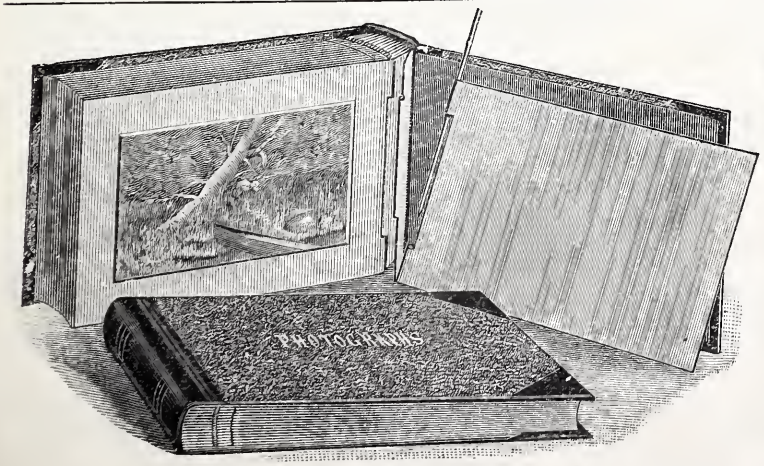
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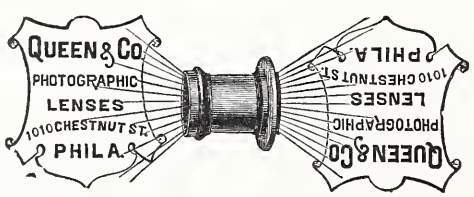
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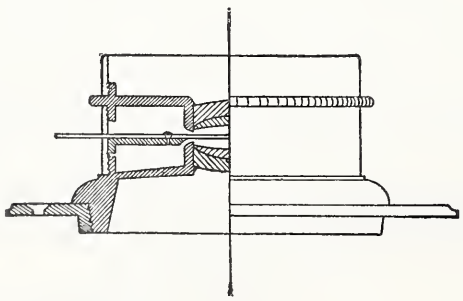
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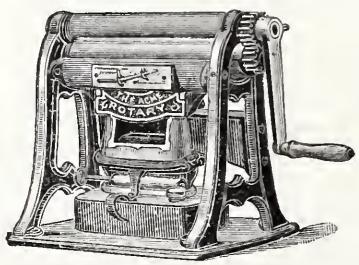
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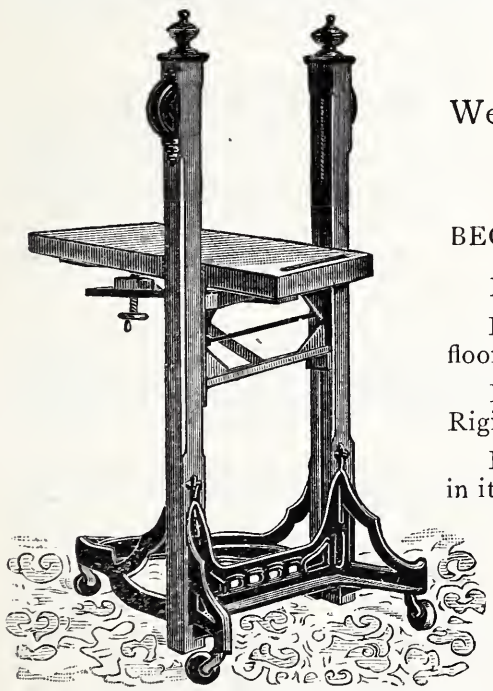
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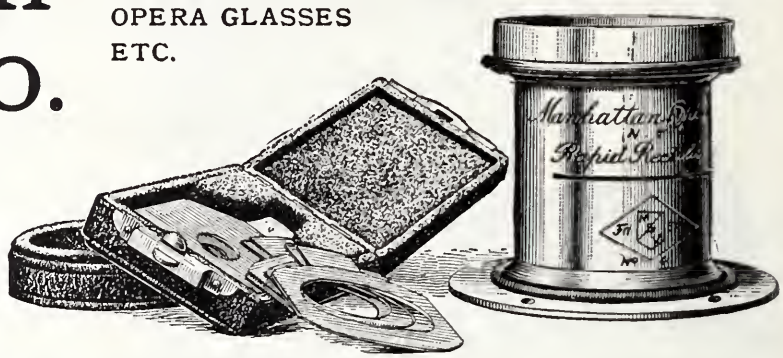
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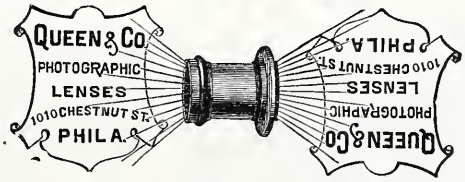
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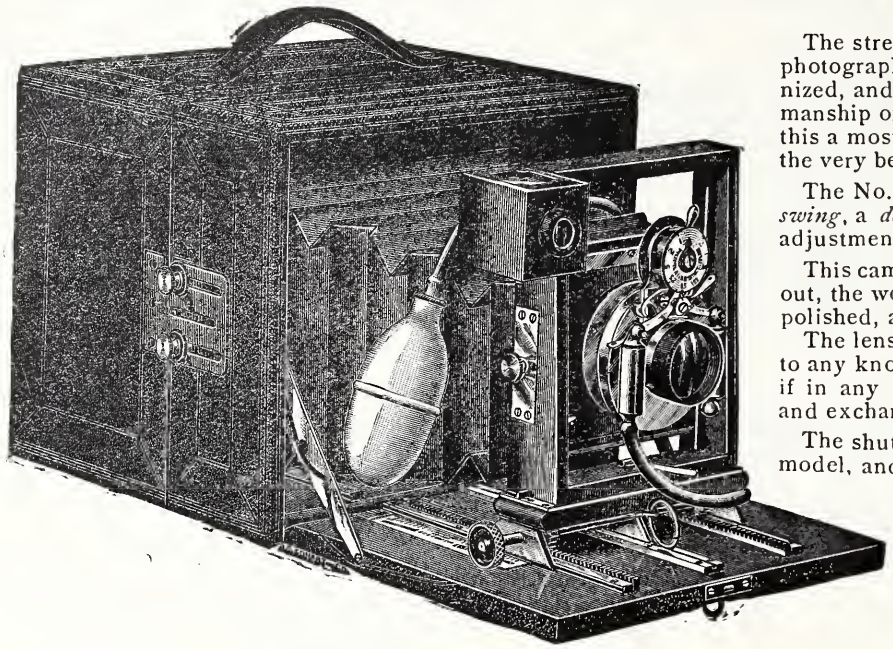
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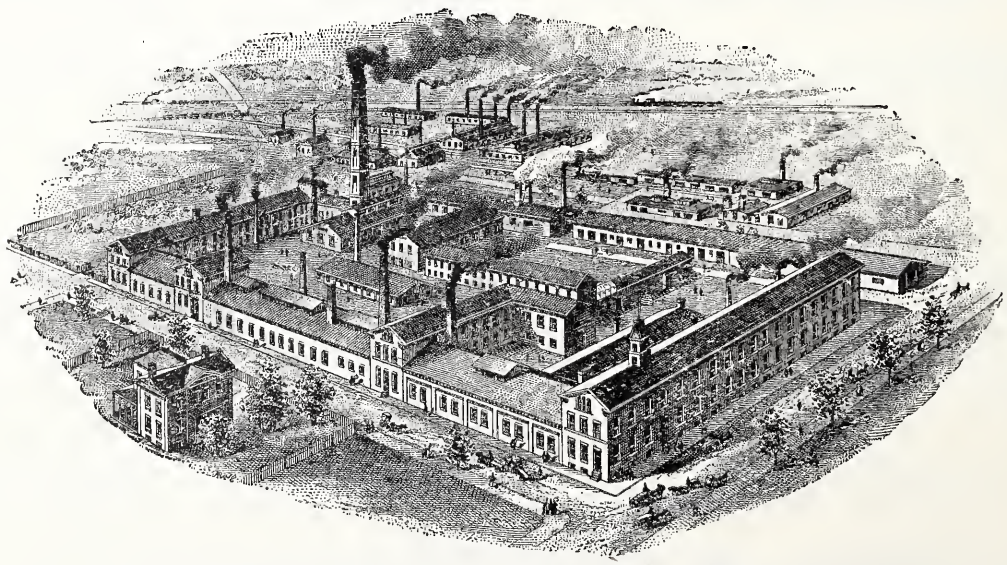
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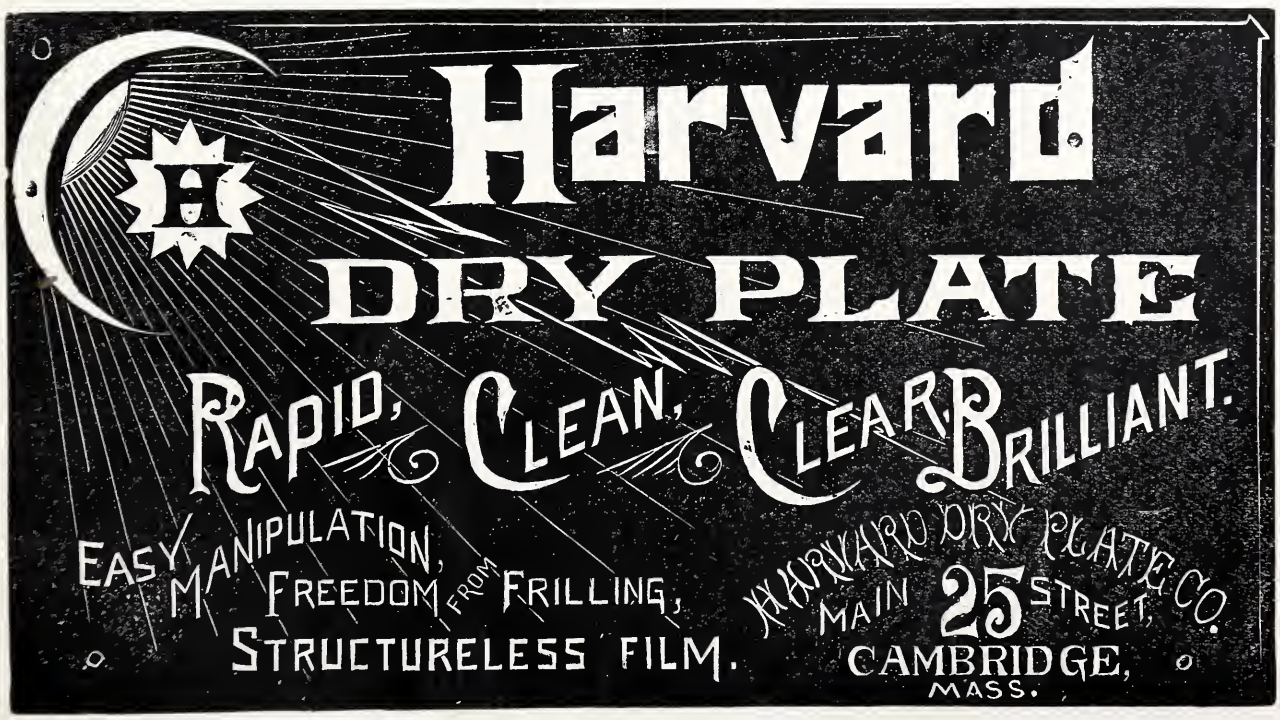
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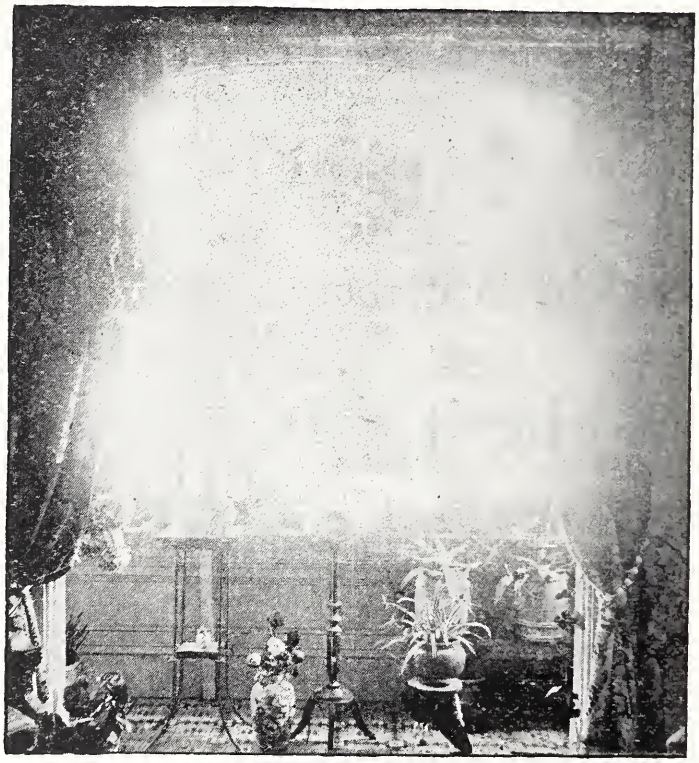
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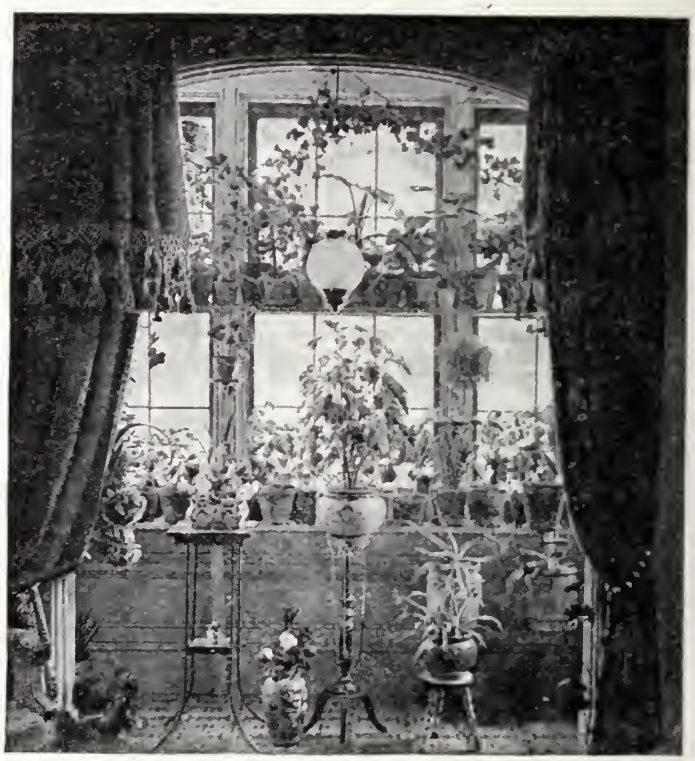
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IN THE HAY FIELD.

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JUNE 23, 1893. No. 614.

IN THE HAY-FIELD.

We present our readers this week with a photogravure reproduction from a negative by Mr. C. N. Parker, a professional, of Morristown, N. J.

Though the picture is entitled "In the Hay-Field," it will be seen that hay is not the product which is being harvested. It probably has been a hay-field, however, and still retains its name, especially for pictorial purposes, though hay is no longer raised there. It is a very pretty picture, made by a successful photographer, and we are sure will please our readers.

M.M. LUMIÈRE'S EXPERIMENTS IN HELIOCHROMY.

For some time past a paragraph announcing the discovery of photography in natural colors, has been going the rounds of the daily papers. We have now become so accustomed to these frequent outbursts of photographic knowledge on the part of the lay press, that we naturally greet them only with a smile—and the waste-paper basket. These wonderful announcements of marvelous photographic pictures in all the exact colors of nature seem to occur periodically, like the tales of the great sea serpent. The latest paragraph of this description has, on further investigation, proved to have emanated from some experiments that Messrs. A. and L. Lumière are making with the Lippmann method of heliochromic photography published some time ago. Many results were shown by these experimenters at a recent meeting of the French Society. Mons. Vidal, writing of these says, "The great characteristic of these projected pictures is the faithful representation of landscapes. The effect is extraordinary on account of the admirable reproduction of the colors of nature. The blue of the sky, the greens in their various tints and gradations with all the most delicate grays and whites, all is here depicted with unrivalled exactitude." Mons. Louis Lumière gives the following as their *modus operandi :*

An emulsion is first made of

A.

Distilled water.....	400 grammes
Gelatine.....	20 grammes

B.

Distilled water.....	25 grammes
Bromide of Potassium.....	23 grammes

C.

Distilled water.....	25 grammes
Nitrate of silver.....	3 grammes

To the solution C, half of A is added ; after which the second half of A is mixed with B. These two gelatinous solutions are now mixed by pouring the solution containing the nitrate of silver into that containing the bromide of potassium. An appropriate color *sensitizer*—such as cyanine, methyl violet, or erythrosine—is now added.

Unfortunately this seems rather vague ; no idea as to the quantity of the sensitizer required is given, and we should imagine this to be one of the most important points in the whole process.

After filtration, the emulsion, which is almost transparent, is ready for coating the plates ; but as films of extreme tenuity are required, the whirling table should be used, by which all excess of the emulsion is thrown off. The temperature of the solution should not be higher than 40 deg. Centigrade. The coated plates are now immersed in alcohol for a short time, and, after washing, are dried.

The emulsion being very thin the washing is considerably shortened. After this the plates are dried, and then before using are treated for two minutes with the following solution :

Distilled water.....	200 grammes
Silver nitrate.....	1 gramme
Glacial acetic acid.....	1 gramme

This treatment apparently gives far greater brilliancy to the images. After drying, the plate is ready for exposure according to Lippmann's method, *i. e.*, with the mercury mirror in contact with the film, described in PHOTOGRAPHIC TIMES, p. 123, 1891 vol.

For development the following formula is given :

1

Water.....100 parts
Pyrogallic acid..... 1 part

2

Water.....100 parts
Bromide of potassium..... 10 "

3

Ammonia of specific gravity ·960.

To develop mix—

1 .....10 volumes
2 .....15 "
3 ..... 5 "
Water.....70 "

The strength of the ammonia is of considerable importance, for any variation, however slight, in the proportions quoted above, would, it is said, be extremely disastrous to the brilliancy of the colors. After development the plate is washed, fixed by immersion in a 5 per cent. solution of cyanide of potassium for about ten to fifteen seconds and dried.

A developer consisting of an ammoniacal solution of cuprous chloride gave remarkably good results, but its instability caused its final abandonment.

For the purpose of arresting the action of the ultra-violet radiations and of diminishing the blue and violet radiations, a tank having perfectly plane, parallel sides, and containing a suitable yellow solution such as Victoria yellow or primuline, is interposed between the sensitive plate and the object.

It is certainly possible that Messrs. Lumière have added another link to the chain of this discovery. Their results are universally acknowledged as an improvement over Lippmann's.

Lippmann, it will be remembered, employed collodion as he did not find the grain in gelatine plates sufficiently fine enough for his work, also the exposure required was considerably longer.

We have not yet had an opportunity of trying the formula given by Messrs. Lumière, but if this is really a practicable method of obtaining representations of colored objects, there is no reason why many others should not experiment in the same direction and so bring the process to absolute perfection if it be possible to do so.

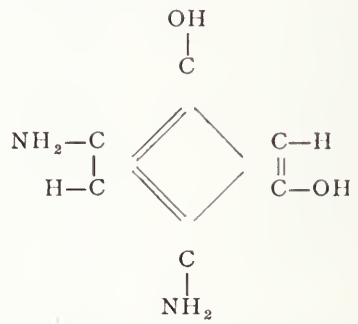
REDUCIN.

Under the above name the "Chemische Fabrik auf Actien," (formerly E. Schering), of Berlin, has introduced a still newer developer, said to be of greater energy and durability than any of the others lately brought forward.

We are at once favorably impressed with a preparation for photographic purposes coming from a firm who, by the manufacture of pure pyrogallol and other chemicals, has gained a world-wide reputation. With their acknowledged accuracy and scientific skill, nothing but good things may be expected from their laboratories.

Reducin, used without alkalis, is indeed an acid developer, and must for that reason be placed in the same category as diamidophenol (Amidol) or at least approximately so, as recent experiments have shown. Amidol requires a trifle, a trace as it were of alkali, to become active.

Reducin the hydro-chlorate of diamido-resorcin is of the constitution :



and its proper name should be diamido-oxybenzol.

Experiments made with Reducin are described in *Photographische Mittheilingen* as follows:

Three grains of it were dissolved in 500 cc.m. of water, and the solution assumed a peculiar green color. Nine minims of sulphuric and 25 grains of sulphite of sodium turned the color to a pale yellow, which, as the manufacturers assert, bleaches out in stoppered bottles, making the solution perfectly clear.

Two plates were exposed simultaneously, each for 10 seconds, and developed respectively with pyro-soda and Reducin solution without soda, but with the addition of 4 minims of a 10 per cent. solution of potassium bromide to each 45 cc.m. of the solution. With it the image came up at once; with the pyro solution signs of development were obtained only after 30 seconds.

Hence we infer Reducin to be an extremely energetic agent.

Another pair of plates was exposed, one for five the other for ten seconds. The former developed with pyro and 4 minims of a 10 per cent. bromide

solution to 45 cc.m. of the developer, and the other with Reducin and 6 minims of bromide.

Notwithstanding the shortened time of exposure and increase of bromide of potassium, the plate treated with Reducin suddenly developed an image, while that for which pyro was used took six times longer to make the picture appear. Details in the finished negatives did not present any remarkable difference.

As the developing with Reducin appeared to be still too rapid under the circumstances above stated, a third experiment was made.

Two more plates, exposed respectively for five and ten seconds were developed, one with pyro-soda and 4 minims of bromide, the other with Reducin without any alkali, but with 8 minims of bromide of potassium solution. With this enormous increase of bromide of potassium, and considering the plate to have been exposed but half the ordinary time, Reducin developed an image with great rapidity, and the negative appeared to be fully out within one or two minutes when viewed by reflected light, while within that time the plate under pyro had not begun to show any effect. To make the first negative intense enough to be a good printer, continued development had become necessary.

Reducin is, according to these observations, a most rapid developer of twice the sensitiveness of pyro-soda, capable of bringing out the finest detail, finer perhaps than other agent.

After these experiments it has been concluded to employ Reducin only in weak solutions, circa, 2 grains in 500 cc.m. of water with 25 grains sodium sulphite and 9 minims of sulphuric acid.

The rapid action of Reducin can be still more surpressed by reducing the concentration of the solution, and with 1.5 grains of it in 500 cc.m. of water and 25 grains sulphite the results comparing well with those with pyrogallol.

A plate exposed but two-thirds as long as one intended for pyro development, came with Reducin and 6 minims of bromide solution more rapidly than with pyrogallol.

To sum up the result of his experiments the author declares Reducin to be a most energetic developer for instantaneously exposed plates. Plates subjected to the same time of exposure and developed with pyro in the one instance and with Reducin in the other, appeared in the first denser in the lights, and thin in the shadow portions; those with Reducin developer were generally of better half-tone and more detailed.

Reducin admits of larger quantities of restrainer, potassium bromide, without losing sensitiveness, and consequently with better contrasts in the result.

The time of exposure required for Reducin developed plates, when compared with pyro-soda developer, can be easily reduced to one-half.

In regard to the durability of Reducin developer, it is stated, solutions ten days old have not shown any marked difference in action, appearance, or energy.

Finally, the author states Reducin to be hydrochlorate of triamidophenol.

We have not yet had an opportunity to experiment with Reducin, but confidently hope the Schering's will soon bring it to our shores to be tested and eventually adopted.

The cry for highly energetic developers is on the increase, and not only the highly sensitive plates but also the energy of the developing agent will secure negatives taken in the infinitesmal fraction of a second.

If we give credit to the experiments above described, Reducin is the substance the ballistic photographer and the astronomer, the meteorologist and the sportsman have looked for.

Amidol and para-amidophenol do not by any means close the list of rapid developers.

Let us see what Reducin can do.

EDITORIAL NOTES.

By means of electricity Professor Vernon Boys has been able to photograph bodies moving through space at the rate of 10,000 miles an hour. With a revolving mirror assisting the electric spark he has been able to secure photographic images of bodies speeding along at the rate of 180,000 miles an hour! Fifty miles a second! In a lecture recently given the Professor demonstrated that the tenth or eleventh part of a second is sufficient to exhaust the photographic power of the spark.

Photography has been able to play a still more wonderful part—in photographing sound. This is done by reflecting a beam of electric light on to a sheet of sensitized paper, from a minute mirror attached to the vibrating part of a phonograph.

We have all read of the celebrated Baron Munchausen, who, in one of his adventures, tried to blow his horn, but the sound remained bottled up inside and didn't come out till some time afterwards; and we remember the curious experience of the arctic explorer mentioned in "Handy Andy,"

who got into such a cold region that the words he uttered all froze in blocks and fell at his feet until he was in considerable danger of being buried in his own conversation. But these fictitional stories are set aside by the fact we have stated.

THE addition of an iodine solution to the starch paste for mounting prints has been strongly recommended for prevention of fading. Some experiments have been made by mounting a photograph partly with iodized starch and partly with a plain one. It is stated that the half of the print mounted with the iodized starch has remained much purer in the white than the other half.

IN a recent number of the *Paris Photographe*, a reproduction is given of a view of Paris taken from a balloon by M. Nadar in 1858. This is said to be, and most probably is, the first photograph of this kind ever made.

THE attention of experimenters seems to be at present directed to the study of heliochromy. That considerable advancement has been made, and that there is every possibility of a perfected process of reproducing the colors of nature as closely as possible being accomplished there is no reason to doubt.

Messrs. LUMIERE, whose experiments are mentioned in another column, have also succeeded in improving Lippmann's process with interference colors, by not only obtaining better and more brilliant results, but by simplification of the manipulation and the shortening of the time of exposure required.

Quite recently, too, we have received a visit from Mr. Bierstadt, whose name will be familiar to our readers, and were shown some of the latest results of his experiments in helichromatic printing. Mr. Bierstadt is evidently coursing in the right direction, for the reproductions, we were told, are absolutely faithful to the original oil painting. Apparently the great difficulty lies in getting the printer to exercise the extra attention that is required for this, at present, rather delicate process.

IN photo-micrographic work a monochromatic light is a great desideratum. The *Revue de Chimie Industrielle* gives a receipt for this; it consists of a mixture of bromide and bicarbonate of soda agglutinated with gum tragacanth and moulded into very small discs. These are placed in the flame of a burner.

THE METOL DEVELOPER.

I have just been trying the new developer, Metol, and as I almost felt convinced beforehand, I do not find it a better agent than the familiar friend, Pyrogallol. My *a priori* conclusion was based on the claim that the Metol developer keeps well after mixture and can be used repeatedly, which means that its affinity for oxygen is less than that of pyrogallol,and as instability is an essential condition of the efficiency in reducing the haloids to the metallic state, I am given to suspect the superiority as a reducing agent, of a developer which is not liable to be itself rapidly reduced. In my comparisons I used the Bausch & Lomb Iris shutter which gives mechanical exactitude of exposure and is for such trials, invaluable, and with the *f*/32 opening and the speed of the 25th of a second, I exposed several pairs of plates developing one of each with the Metol, of the strength given in the directions for studio work, and the other with pyrogallol at about three grains to the ounce, using carbonate of soda in both cases. The plate under Metol came out rapidly and the image was entirely visible before the other was to be seen, and when the image was all out in the pyrogallol plate, I added twenty drops of bromide to the four ounces of developer, and increased the soda, after which I left them to intensify until the maximum seemed to have been reached. The subject was one of the strongest possible contrasts, white buildings in the sun with an open window looking into a dark room, in the near distance, in the obscurity of which were dimly to be discerned some angles of the wall, more and more dimly as they receded. When the Metol developed plate would no longer intensify, I fixed the two and found that there was a clear, if very slight advantage in the pyro in each case, so far as the detail in the dark room was concerned, while the color of the negative was decidedly more favorable to printing, the Metol giving a slightly bluish or slaty tint not particularly pleasant to the photographic eye, or promising of brilliancy in the print.

The directions issued with the Metol state that "Metol permits of a shorter exposure than the older developers," a statement which is always made for a new candidate for the favor of the craft, but which is rarely based on careful experiments, and which I have never found justified in any comparison between the "older" pyrogallol and any of its rivals. The want of scientific accuracy in the directions sent out with the Metol may be seen in the direction for the checking of the development in case of fog "for plates inclined to fog, up

to 20 drops of bromide (1-10) or 20 drops of fixing soda (1-10) can be added. In larger proportions than these bromide retards development." But one is compelled to ask "larger proportions" than what? If the dose of developer is that required for a plate 4x5 and we add the sacramental 10 drops of bromide what shall we add when the dose is for a plate 10x12? In one case it will retard development, or in the other it will not be enough; if 10 drops are enough for the latter size, then it would ruin the smaller plate to add it. Such carelessness shows that the author of the directions had a vague idea of his subject which deprives his opinion as to the relative rapidity of the developers of all value. And in fact his claims are unfounded. Metol has no other advantage over pyrogallol, in my opinion (and in it I am confirmed by one of the most experienced operators I know, who has tried it more at length than I have, and declares it inferior to pyrogallol) than that of keeping and being capable of use for several plates, but this is altogether a minor matter for what we want is a power of development which is the greatest obtainable in case we need it, and the capacity of being controlled when that is needed, and for these qualities no developer has been introduced which equals pyrogallol. The reckless statements of the inventors of the new chemicals, that their drug will develop with the same efficiency and with half the exposure (and I have seen statements which reduce the exposure to the third) are mere trade tricks. Metol stands on a par with Hydroquinone as to power of development, is inferior to it in the color of its image, and is superior in the rapidity of its action alone. This may be a decided advantage in some cases and for those it would be advisable to use it, as for the Eastman film which is more than films on glass liable to being injured in prolonged development. But for these I have not yet made any trials. I shall not adopt Metol, though, as it keeps in solution and may be found useful in special cases, I shall have it on hand and may find cases in which it is of value greater than I now imagine. Its absolute developing power is a small per cent. less than pyrogallol's and I judge about that of eikonogen.

W. J. Stillman.

"What do you think of this portrait of me, my dear?" asked Witherup.

"It is very smiling and pleasant," said Mrs. Witherup. Then she added wistfully, "I wish you would look like it once in a while, John."—*Tit Bits.*

COMPOSITE HELIOCHROMY.

(*Continued from page* 317 *and concluded*).

I will take this opportunity to suggest that the similarity of the photographic defect to an inherent defect of color-vision may be taken as an argument in favor of the theory that color-vision is itself essentially photographic. It appears to me that there may be in the retina three light-sensitive chemical substances, each of which, when acted upon by light, reacts upon by the nerves of vision to produce a definite sensation, which is one of the recognized fundamentals. We may assume that one of these substances resembles, in its optical properties, a coal-tar dye, which is sold as "multiple yellow," and which shows an absorption curve very much like Captain Abney's curve to represent the action of spectrum rays upon the fundamental blue-violet sensation; that another substance similarly resembles aniline magenta, which shows an absorption curve similar to Maxwell's curve for the action of spectrum rays upon the fundamental green sensation; and that a third similarly resembles an analine blue, that shows an absorption curve similar to Maxwell's curve for the action of spectrum rays upon the fundamental red sensation. Such substances may be in liquid form, like solution of the dyes, and the mixture, like a mixture of the dyes, would absorb all the spectrum rays that excite vision. The spectrum rays at Fraunhofer line *D* would be absorbed about equally by the blue and magenta substances, thereby exciting about equally the two fundamental sensations red and green, which make up the compound sensation of yellow. All other compound sensations would be similarly explained. Solorization in one of these substances, by bleaching or destroying some of it, would temporarily weaken the corresponding sensation, but at the same time increase the sensitiveness of that portion of the retina to other colors by giving some of the spectrum rays freer access to one or both of the other two substances. It seems to me that no other theory will explain so much as this. But my paper is not on the subject of color-vision, and I must therefore reserve further consideration of this subject for another occasion.

Under favorable conditions, the photographic defects which I have mentioned are so small as to pass unnoticed by the ordinary observer, to whom the reproduction seems perfection in every respect; under unfavorable conditions, the results might be quite as unsatisfactory as are sometimes the results in monochrome photography. To look for a nearer approach to per-

fection would be unreasonable in the present state of photographic science.

I hope to go more exhaustively into this branch of the subject at some future time, but believe that, in a general way, I may claim to have stated the case fairly. If the scientific specialist is inclined to think that I may have made out too good a case for composite heliochromy, the practical photographer will, on the other hand, be astonished to find that, in spite of all theoretical and practical difficulties, the image of familiar objects as seen in the heliochromoscope, is as satisfying to the eye as the transient image on the ground glass of the camera, which he has so often admired and dreamed of fixing.

In actual practice, defects due to quite different causes have been far more troublesome and irritating to me than either of those described. Fortunately, however, they are not inherent in the process, and it was only necessary to discover their true cause in order to eliminate them. With certain developers—hydroquinone being one—the image of the blue-violet sensation commences to develop first, and goes on almost to completion long before the detail is all out in the image of the red sensation, even though the latter may appear relatively over-exposed after the development is fully carried out. Under such circumstances, the relation between the two images will vary with the time the plate is left in the developer, and it is difficult to insure accuracy. This difficulty was substantially overcome by using the eikonogen developer, and seems to have entirely disappeared with rodinal development.

With some sensative plates, the image of the green sensation, formed principally in eoside of silver, develops more density than either of the other images, and introduces troublesome irregularities. Fortunately, some of the best makes of sensitive plates are free from this defect, and may be selected for this purpose.

For a long time, in spite of every precaution I knew how to take, my negatives developed considerable more density towards the edges of the plate than towards the middle. The consequence of this was that the top of the negative of the red sensation, and the bottom and outer sides of the negative of the green and blue-violet sensations, would be so overdense as to make the colors in those parts of the reproduction distinctly incorrect. I imagined this to be due to a defect in the sensitive plates, an effect of the more rapid drying of the emulsion at the edges in process of manufacture. In this I was, happily, mistaken. It proved to be due to access of air to the outer portions of the plate during the process of development, by constant rocking in a dish containing a rather small quantity of developer. The unevenness disappeared as if by magic when the plates were developed by deep immersion in the developer in a dipping bath. Probably the reason that this unequal action of the developer has not been noticed in monochrome photography is that the centre of the plate usually receives more light than the edges, and the action which is so injurious in the color process is seldom more than sufficient to compensate for this unevenness of illumination.

In my earlier experiments, light objects against a dark ground frequently reproduced with a red or reddish halo, because of strong halation in the image of the red sensation, so that, even for objects that come very well in monochrome photography, I found that the plates should be "backed" for composite heliochromy.

The results which I show, taken in connection with what I have said, will make it evident that the process has already been reduced to very successful practical operation in my hands, and that the conditions of success are such as may easily be realized by others when provided with the same apparatus properly adjusted.

The method of carrying out the process to the production of color-prints, although it will doubtless prove of great value for some purposes, cannot, by reasons of its complications, difficulties, and cost, be successfully utilized by amateur and general photographers. As long ago as in the year 1881, when I was the only successful producer of half-tone process blocks for the type press, and had considerably improved upon the older methods of composite heliochromy, without quite realizing the true principle which I first published in 1888, I made the first photographic reproduction of a colored subject by three impressions from process blocks. This three-color print, a reproduction of a chromo-lithograph, was referred to in a leading article in the *Photographic News* of September 5, 1884, p. 561. I have one of the prints with me now. The lines expressing the light and shade were run in different directions in the different blocks, in order to avoid the production of a disagreeable pattern—a plan which has quite recently been claimed and patented as a new invention in Germany, and adopted by Kurtz, of New York, and others. My Franklin Institute lectures upon this subject, in 1890 and 1891, were also illustrated with examples in cemented gelatine color-prints, mounted as lantern-slides and window transparencies. The latter are now in the United

States National Museum at Washington. I have not followed up these developments of the process very industriously, because it has been my ambition to realize a simple and readily available method of photographic color reproduction, perfect so far as it goes, before undertaking to fully develop the process in its more complicated form. The best fruit of my efforts in this direction is the heliochromoscope and its appurtenances, which I claim to be the first completely successful means for reproducing the natural colors by photography.

I believe that scientists who have been aware of the impossibility of escaping from the inherent photographic defects which I have described, have greatly overestimated their importance, through quite overlooking the fact that they result in nothing more serious than an apparent exaggeration of natural defects of color-vision, for which we are already in the habit of making unconscious allowance.

While the not altogether unreasonable doubts of the true scientist have made him cautious and reticent in his attitude towards the claims made for composite heliochromy, some, who write with an air of authority upon subjects quite beyond their comprehension, have industriously discredited my efforts to substitute the application of true theories, definite methods, and scientific tests for false theories, wrong and indefinite methods, and unsuccessful guesswork. A well-known representative of the latter class recently went so far as to characterize my work as a mere "laying of stress upon words," "of the nature of throwing dust into the eyes of simple mortals." This is certainly a sufficiently bold and simple way of combating facts and arguments that are not comprehended. A sufficient reply to all such wilful or accidental misrepresentations, past or future, may be found, by those who are capable of understanding the subject, in the two papers which I have now had the honor to read before the Society of Arts, and in the references given and results shown.

Objection has been made to the use of the terms "heliochromy," "photochromy," and "color photography," as applied to this process of color reproduction. It has been said that because colors can be produced directly by the action of light upon certain sensitive surfaces, these terms should be restricted to processes of that character. It was to meet this objection that I named the process "composite heliochromy." If a better descriptive name can be suggested, I will readily adopt it. But I shall be greatly surprised if the public does not finally insist upon calling the production of chromograms after my method by the name of "color photography," just as they now call the production of stereograms "stereoscopic photography." It is of comparatively little consequence what name is given to the direct processes, so long as they cannot be made to reproduce the colors of nature, and are, therefore, of no interest to the general public. It is the successful process that should have first choice of suitable names. The only recognized talking machine of to-day is the phonograph, although the name "talking machine" was applied to something far different—an arrangement of bellows and reeds, and pipes, and keys, in imitation of the human vocal apparatus—long before the phonograph was dreamed of. Perhaps the heliochromoscope would be more properly called a photochromoscope, a name which I like better, but have not adopted, because inventors of devices of a very different character have already been quarrelling about the right to use it.

In conclusion, a criticism of the heliochromoscope, from the painter's point of view, may be of interest. An artist friend, who leans toward the Impressionist school, on seeing the instrument for the first time, said the reproductions of nature offended him in the same way that ordinary photographs did, by idealizing nothing, and leaving nothing to the imagination; in short, the reproduction was "too absolute to be artistic."

F. E. Ives.

WHAT TO DO ON DULL DAYS.

A GREAT many photographers, especially at this season of the year, are complaining of dull days. Such days are a blessing to many of us. There is always something for the wide-awake, progressive photographer to do. The rooms need renovating. The camera and stand need a fresh coat of varnish. The old stove needs blacking, or better, removing from the room entirely. And (excuse me for mentioning it) the samples should be changed, especially those on the street. It is surprising how long some photographers can get service out of old faded photographs. The public expect their pictures to look like the samples exhibited on the street. Hence the necessity of always keeping them fresh and bright.

The finished negatives should be carefully labeled and stored away for future use.

Many other things will suggest themselves to the progressive photographer. It pays to keep every thing in order.

J. R. Swain.

THE ART AND PRACTICE OF GELATINO CHLORIDE PRINTING.

(*Continued from page* 318.)

PART I.

THE MANUFACTURE OF THE PAPER.

CHAPTER V.

COATING THE PAPER.

WHAT we have to consider in this chapter is the best method of applying the emulsion to the paper so as to obtain as even a coating as possible, free from bubbles or other defects.

In preparing large quantities the coating is, of course, done by machinery. A roll of the paper is placed in a machine and passes round a roller which dips into a trough containing the emulsion kept always at the same height. The paper now coated then passes on and is caught up in festoons and in this manner hung up to dry.

As, however, these chapters have been written chiefly for those anxious just to prepare their own paper, we shall consider the best method of preparing the paper in small quantities without the necessity for expensive machinery.

Many workers succeed best by simply floating the paper in a dish containing the emulsion. To do this a large shallow dish, about two inches or so larger than the paper to be prepared, is laid in another metal dish containing water, kept hot with a small spirit lamp, to prevent the gelatine emulsion from setting. After the emulsion has been heated to about 100 deg., it is poured carefully into the shallow dish, which should, of course, be perfectly clean. In pouring try to avoid the formation of air bubbles, but should any be formed a strip of stout blotting-board, a little wider than the dish should be used to skim the surface of the emulsion and remove them. The solution is then ready to receive the paper, which is laid face downward upon it. This is done by taking hold of two corners (diagonally opposite to each other) in the finger and thumb of each hand, bringing the two together, then touching the surface of the emulsion with the curved paper, and then by gradually separating the two corners the paper is laid flat without any air being able to get beween, which is the object in view. When first laid on the solution the paper is apt to curl up and then lay down flat again. It can then be removed slowly by raising one corner and then drawing the paper away, catching hold of another top corner as soon as it is lifted. A good plan to avoid soiling the fingers is to turn up the two top corners so that they can then be easily laid hold of.

If on removing the paper any air-bells or bare uncoated patches are noticed, they should be brushed over with a camel's-hair brush, dipped in the emulsion and the paper laid down again.

The beginner should not at first attempt to coat sheets too large in size, 20 x 24 inches is the commercial size, but these will at first be found unmanagable, and sheets of smaller dimensions so calculated that a certain number of pieces, the size generally used, can be cut out of it and waste avoided.

After drawing the paper from the emulsion it should be held up to drain off the superfluous solution. Hold the bottom of the coated paper near or just touching the emulsion and so avoid the formation of air bubbles and then hang up to dry. When adopting the floating method of preparing the paper it may sometimes be found necessary to thicken the emulsion by using a little less water, otherwise the film will be too thin.

Another and a quicker method of coating the paper, is as follows ;

Take a sheet of the paper and divide it in two lengthways. This gives two strips, 10 inches wide and 24 inches in length. Place these back to back and fold over the top edges about a quarter of an inch, twice if the edges do not keep together. Pour the emulsion into a deep dish and tilt one end so as to have all the solution at the other.

Take hold of the top of the strips with the thumb and finger of the left hand, immerse it in the emulsion and draw the paper quickly through, keeping it under the solution with a piece of glass or other contrivance. We have found a glass rod heated and bent in the form of a triangle to answer the purpose best. The glass being round the paper slips under easily. Drawing the paper through the emulsion must be done fearlessly in one sweep; any stoppage will produce marks. The quicker the paper is passed through the thicker will be the film so that this can in a measure be regulated to suit requirements.

As soon as the paper is drawn through it is held up to allow the superfluous emulsion to drain back again. At the same time it can be examined and bubbles broken, or patches coated by touching with a camel's-hair brush dipped in the emulsion. This must, however, be done immediately the paper is coated, after the emulsion is set spotting it will only produce worse marks.

Walter E. Woodbury.

(*To be continued.*)

IS THE PRESENT CONSTRUCTION OF PHOTOGRAPHIC STUDIOS WRONG IN PRINCIPLE?

[London and Provincial Photographic Association.]

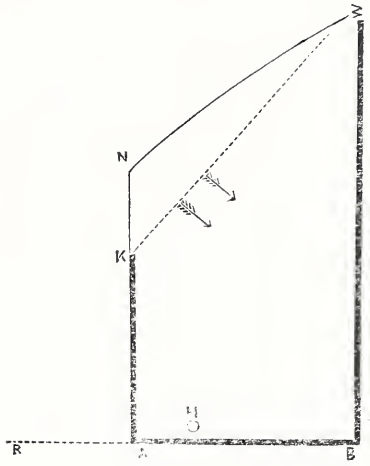
In the construction of photographic studios, whenever possible, the chief light is obtained from the north, and the studio is principally glazed on the northern side; by this method direct sunlight is cut off from the sitter and steady illumination is obtained. Hence the light most used by photographers is that reflected by the particles floating in the air, for, if no particles were there to throw back the light of the sun, we should have the black sky sometimes witnessed in the Alps when the air is extremely dry, and then might almost as well use the light reflected by an unglazed backboard. It is the same with the sea. Within a few miles of the shore we get different shades of green which grow clearer as the land is left behind; but farther out the sea appears of a dark indigo color, because of the scarcity of floating particles to reflect light to the eye. If, then, Professor Tyndall's plan be tried of putting a particle of large size into the sea, by flinging a white dinner plate overboard, that particle reflects green light to the eye as it sinks, and would do the same were it broken into myriads of smaller pieces.

Before coming to the practical part of the subject, it is necessary to consider the nature of our reflecting screen in the northern sky. The floating particles in the air of towns consist of minute drops of water, innumerable spores of small seeds, greasy coal smoke, fragments of dried horse-dung, influenza and other germs, and dirt of endless varieties, including dust from meteoric stones rendered incandescent by friction when entering our atmosphere at planetary velocities. These solid particles favor the precipitation of water, so also in a still greater degree does the sulphurous acid given off from our coal fires. These aggregated varieties of floating dirt are to some extent rendered valuable when a beam of sunshine is reflected by them, so as to mark its track when the beam enters a dark cellar through a hole in a shutter; we also see them floating in the light coming from the projection lenses of the magic lantern, and we swallow them wholesale with every breath of air which we take into our lungs. These dirty particles, then, form our reflecting screen in the sky to the north of the studio.

Sometimes we get a better reflecting screen, consequently more light in the studio, when cumulus or other clouds in the north are illuminated by the sun. This improvement is but partial, because the clouds present also portions of their shadow sides, and do not cover the whole of the northern area in view.

The question I now wish to raise among those present who know so much more about glass studios than myself, who am not the happy possessor of one of them, is whether it would not be better to abolish the floating dirt reflector and diffuser—to abolish even the floating cloud, and to provide a cloud of our own which shall be always there, which shall present to the eye no shadow worth mentioning, and shall be of a pure white. I mean a whitewashed wall, for experience with the lantern has already demonstrated that, as a dead-white reflector and diffuser of light, nothing excels common whitewash.

Supposing these ideas to be correct, the result is that we shall have to build studios with a southern aspect, glazed high up on their southern sides. The accompanying diagram will show what is intended, for verbal descriptions of mechanically constructed objects are liable to confuse both listeners and readers, unless illustrated by drawings to show exactly what is meant. The suggested studios will be high in proportion to their breadth; for instance, let A B be the end of a little studio twelve feet wide, then the whitewashed wall, W B, say, of an adjoining building



should perhaps be twenty-four feet high. The southern side of the studio is boarded up, except for special purposes, to a height, A K, of, say, ten to twelve feet all along the side, and the glazed portions are at K N W. Thus, the rays of the sun entering the studio in the direction indicated by the arrows fall upon our artificial cloud or whitewashed wall, W B, which wall under the circumstances then gives the chief light for the illumination of the sitter at H.

Into minor details it is not necessary to enter. Of course, the studio, as at present, will have to be boarded at the opposite ends, also along the roof, N W, and the side, N K, for a short distance from the ends. Blinds for regulating the major light should be of neutral or dark tint, and movable along the face of the wall, W B; blinds also at the glazed portion of the studio will be necessary. Incidentally, it may be pointed out that, if A be a garden wall with a street on the southern side at R, that wall can be raised to K, and a good studio built at A B without enabling boys in the street to make remarks for the calming of the minds of the sitters, for street boys not being ten or twelve feet high in these latitudes will be unable to see into the studio. It would be difficult to built upon the ground a good present-day studio if there were a brick wall and street to the south and a high house to the north. If the glazed roof had the pitch K W, the suggested studio of the future might do nearly as well, and would shoot off snow capitally. This kind of lighting might also be obtained by building a studio of the usual Noah's ark shape, and taking the chief working light from the whitewashed side of a dwelling-house to the north; but, in the preferable lean-to studio pictured, a lower roof and a whitewashed house-wall outside and above it would not give as good lighting, because the light from the outside wall would fall upon the glass roof at such a grazing angle as to be largely reflected off outside without entering the studio at all. The boarded side, K A, might be made of large sliding partitions, to be pushed back into the two ends of the studio, and then expose a glazed surface so as to take direct light in from the south upon those winter

days during which the photographer is glad of any light he can get.

Peradventure those portrait photographers, who have taken special notice of the extent to which exposures are shortened when the northern sky is filled with clouds illuminated by the sun, may be able to make some kind of guess as to the extent to which studios of the kind now suggested may expedite exposures, and lengthen the average photographic working day, remembering also that the whitewashed wall presents a more uniform white surface than do masses of cloud. In the remarkable weather we have had for the last six weeks of almost unbroken sunshine, I have noticed that there have been scarcely any bright clouds, at least within a circle of a mile or two of the Crystal Palace, for, being engaged in some new investigations in relation to gelatine emulsions, I have specially noticed the absence of clouds when I was frequently out of doors trying plates. Had portrait photographers had a white wall to the north, instead of the gray haze of an average cloudless London sky, they would have received even better light in the studio than during April last. Some comparative experiments on the light from a northern sky and the light from a northern whitewashed wall, made with the sensitometer of Mr. J. B. Spurge, of London, which is one of the most accurate standard instruments we possess in photography, would be exceedingly useful. They should extend over a considerable length of time, and be made under different conditions of weather and elevation of the sun.

Having raised the major question before you—who know so much more practically about glass studios than myself—whether photographic glass houses should not be glazed on the south instead of the north, and have an artificial reflector and diffuser, it is not desirable to-night to go into minor details about studios. Many of those in existence are too short; there are reasons in portraiture as in landscape work why more pleasing results can be obtained by using lenses of longer focus than those usually employed; in fact, if a photographer had light enough, and a studio long enough, there is much to be said in favor of his using single combination lenses of long focus for portraiture. Supposing the studio to be built of glass and wood, there is much to be said in favor of making its walls and roof double with an air space between; it would be much warmer in winter, and would economize fuel. Some studios are built in this way in St. Petersburg. There are considerable advantages in the use of iron instead of wooden frames for glazing. The developing room should not be a small death-trap, but, when possible, a good-sized room in the adjoining dwelling-house, and fitted up as a laboratory. When, however, it is built as part of the studio, it should be a large room at the opposite end to that occupied by the sitter, and the door should so open that the camera can be used from inside the developing room, when it is desirable to place it at an exceptionally long distance from the person to be photographed. All these, however, are matters which have been previously publicly considered; but the major problem mooted in this paper is new so far as I know, and I have recently made some search into the literature relating to glass studios. In photography it is dangerous to say that anything is new. Whether the problem before us is or is not new matters little so long as in the discussion it brings forth from your stores of knowledge some information which will be useful to the photographer.

W. H. Harrison.

THE PHOTOGRAPHIC SOCIETY OF THE AMERICAN INSTITUTE.

The Photographical Section of the American Institute held a regular meeting on Tuesday, June 6th.

After the ordinary business Prof. D. L. Elmendorf gave a lantern lecture illustrating and describing a twelve day's journey through Ireland. The lecturer commenced by stating his opinion that we in New York knew considerably more about the Irish than about Ireland, which sally produced considerable laughter. The route taken was from Scotland to Belfast, on to Port Rush, Giant's Causeway, then to Londonderry, from thence to Dublin and on to Killarney, Queenstown, and Home again.

The slides shown spoke well of Professor Elmendorf's skill as a photographer, nor were they at all spoilt by a little coloring matter added to give a better effect, which in many cases was exceedingly good. After illustrating street scenes in Belfast, the jaunting car, described as the invention of the devil, a walk was taken along the North Coast. Nothing can be more beautiful than the rocky coast scenery around Ireland. The Giant's Causeway is always an interesting subject. The lecturer said that he was much disappointed with it, it being only about 700 feet long and 300 feet wide. This curious formation, however, always will have an interest of its own, for it has never yet been clearly understood if it has been made by nature or man. The exactness in the measurement of these curious shaped stones, however, leads one to think they must have been made by prehistoric man. In many cases the sides of these hexagonals did not vary the 100th part of an inch. Moveover, they were not made flat; in nearly every case the bottom was convex, fitting into the concave top of the underneath one.

At the Giant's Causeway is a hotel which the lecturer advised every one to avoid owing to the extravagant prices charged, and to stop at Kane's. True, said the Professor, Dennis will wait on you in his shirt sleeves, but everything is clean and comfortable and the charges very moderate.

As it rains on an average 320 days in the year, photographing in Ireland must often be done under extreme difficulties. At the entrance to the Causeway the lecturer discovered what he considered the most remarkable thing in Ireland, a temperance stall. The only one he ever saw in Ireland. Round about Bantry Bay and Glengariff is the most lovely scenery imaginable, many charming bits were secured by the lecturer, who advised staying at the Eccles Hotel. The best time for photographing in this country, we are told, is either before 5 o'clock in the morning or after 5 in the evening. Professor Elmendorf in photographing a waterfall, instead of giving a long time exposure tried the effect of giving 42 instantaneous exposures; the result was certainly good in giving a much truer idea of falling water than the usual chalky white masses seen.

Cork, the town most characteristic of the Irish, was next visited, nor were the Blarney castle and stone forgotten.

Professor Elmendorf spoke in strong terms of the Irish evictions and the cruelty of the landlords. In such a short visit it is impossible that the learned lecturer could have obtained any real insight into the character of the Irish peasantry.

During a travel over the country, extending over two years, we came to the conclusion that in no other country in the world have the tenants been treated with more

leniency than in Ireland. In nine cases out of ten they have been evicted when perhaps owing four or five years rent and even longer, and with no intention of ever paying any. How long may we ask would a New York landlord wait for his rent? Would your excuse that the crops had failed or that business was bad, be of any avail? We guess not.

Arriving at Queenstown the lecturer took us on board the steamer, bound for New York, when after sighting a shoal of porpoises and seeing some very rough waves, we came in sight and had a fine view of Bartholdi's statue. Here the lecturer, after saying he guessed we were near home again, bid us good-night, after a most enjoyable evening's entertainment.

KLORO PAPER.

This is the name given to a new printing-paper placed on the market by the Photo Materials Co., of Rochester, N. Y., and the advantages that are claimed for it are—that it is thoroughly reliable, prints with brilliant high lights, giving silky half-tones, and rich, transparent shadows, and is suitable either for strong or soft negatives. Further, it neither cracks, curls, nor blisters.

The manipulations are simple enough. The printing is carried on until it is a little darker than desired when finished.

We notice that with the combined toning and fixing bath the sulphocyanide of ammonium is omitted. The formula runs :

COMBINED TONING AND FIXING BATH.

SOLUTION 1.

Water	24 ounces Troy
Hyposulphite of soda	4 ounces Troy
Powdered alum	1 ounce Troy
Acetate of lead	½ ounce Troy

SOLUTION 2.

Chloride of gold	15 grains Troy
Water	8 ounces Troy

Boil the water and dissolve the hypo while hot, then add the alum. When this solution is cooled down to normal temperature, it should be decanted, or better, filtered from the precipitate of sulphur, and the acetate of lead dissolved in about 1 ounce of water and then added.

For use take 1 ounce Solution 2, to 8 ounces Solution 1. The prints should be placed in this bath without previous washing, and should be toned in about five minutes.

To insure fixing it is advisable to immerse the prints after they have the desired tone, into a fixing bath of 2 ounces hypo, one half ounce salt, 32 ounces water.

This combined toning and fixing bath is easy to manipulate and gives permanent prints, if the instructions are strictly adhered to.

A method of toning and fixing in separate baths is also given, but for this the prints must be a shade deeper.

SOLUTION 1.

Acetate of soda	1½ ounces Troy
Phosphate of soda	1 ounce Troy
Water	40 ounces Troy

SOLUTION 2.

Chloride of gold	15 grains
Water	8 ounces

For use take 1 ounce Solution 2, to 8 ounces Solution 1. Before using, this bath must stand for 24 hours or so, otherwise the prints will be streaky. One ounce of solution is sufficient for 40 cabinets.

The prints should be washed face downwards, in seven or eight changes of water. To judge the tone the prints must be viewed by looking through them against the light. Fix in

Hyposulphite of soda. Crystals.	2 ounces
Water	16 ounces

After fixing, the prints should be well washed in many changes of water for about an hour. If left too long in the water they are likely to turn yellow.

For glossy surface, squeegee on to glass or a ferrotype plate prepare with a solution of beeswax 1 part, in benzine 100 parts.

NOTES.—Avoid touching the surface of the prints with the fingers. Tones will darken somewhat when dry, so keep on the red side. Keep the bath below 60 degrees.

We have found it preferable to use an additional fixing bath, even when using the combined bath.

Photographic Societies.

The New York Society of Amateur Photographers held an ordinary meeting on the 13th inst. Mr. F. C. Beach described a new form of tele-photographic lens. A number of slides sent by the California Camera Club were shown upon the screen.

The Seventh Joint Exhibition will be held in New York in the Spring of 1894, under the auspices of the Society of Amateur Photographers of New York. At the last regular meeting of the society the following resolution was adopted :

"*Resolved*, That a committee of three be appointed by the President of the Society, to arrange for and take charge of the Seventh Annual Joint Exhibition of the Society of Amateur Photographers of New York, the Photographic Society of Philadelphia, and the Boston Camera Club, to be held under the auspices of this Society in the year 1894, and that the President be empowered to add to the membership of the committee from time to time upon request of the committee."

The committee will probably be appointed in a few days.

Notes and News.

Mr. W. C. Shafer has recently opened an art studio in Fairmont, W. Va.

The business of the Misses K. A. & M. S. Hallock, the well-known photographic stock and artists' material dealers, of Evansville, Ind., has been purchased by Messrs. Smith & Butterfield. We trust the latter gentlemen will continue to meet with the prosperity enjoyed and thoroughly deserved by the Misses Hallock.

Julius F. Sachse, the learned editor of the *American Journal of Photography*, was in New York last week in search of historical matter.

Mr. Sachse employs his knowledge of photography to good advantage in copying old manuscripts and other historical documents.

The Graphic of Chicago, for June 3d, again reproduces a picture from THE PHOTOGRAPHIC TIMES without giving credit to the source from which the picture was taken. It is the portrait of George Inness, in his studio at Montclair, which appeared in our issue of April 7th. The article which accompanies the portrait is also largely cribbed from the same number of our magazine.

When you have been made to pay $2 for the privilege of using a hand camera at the World's Fair it will be as well to make as many exposures as you can. The Eastman Kodak Co. are manufacturing a special Columbus spool of film to meet this requirement. These we are told will enable the Kodaker to get the whole exhibition on one roll of film and to have a good bit left over fo taking the Japs and Arabs in the Midway Plaisance.

The Eastman Kodak Co. inform us that owing to the fact that a charge of $2.00 per day is made by the World's Fair authorities for the privilege of making pictures on the Exposition grounds they have deemed it important to adopt a plan whereby success would be assured every Kodaker who pays for this privilege. They have accordingly secured the concession for a film dark-room which will be open about June 15th. Competent attendants will be in charge to set right anybody that may have trouble in operating the Kodak. They will be prepared to reload Kodaks and also to make any slight repairs that may be necessary. A number of Kodaks will be kept on hand which will be loaned to replace any that works unsatisfactorily.

The Editorial Table.

D. G. Howell, of Toronto, Can., formerly with Messrs. J. G. Ramsey & Co., of Toronto, has sent us a collection of very fine photographs made with the Knack camera on Cramer Crown plates. They were all instantaneous pictures, and are, without exception, all artistic subjects. The development is excellent, bringing out the most delicate detail, and yet preserving an agreeable shading. The prints also are well made.

We have received a copy of the European edition of The Hawkeye booklet, published by the European Blair Camera Co., Limited, at 9 Southampton St., High Holborn, W. C., London, Eng.

The European Company is a distinct and separate corporation, the capital being principally furnished by European investors. Mr. T. H. Blair, Manager of the American Company, is one of the managing directors of the European Company, and will frequently be in Europe. But Mr. Blair does not relinquish any interest in the American Company, having, indeed, recently increased his responsibility by becoming a Vice-President of the American Company as well as its General Manager.

RETRIBUTION.

"PRETTY hard on that thief."

"What?"

"They took a photograph of him for the Rogues' Gallery with the very camera that he stole!"

Queries and Answers.

80 J. O. S., Hoquiam, Washington.—Will you be so kind as to answer for me a few questions?

1. What causes gelatine paper to print in streaks, if it is kept any length of time; and also what causes some to tone streaked when it appears to print all right? It is not from handling with greasy fingers or from toning too many in the dish at one time.

2. What causes prints to tone sometimes very rapidly on the edges, and hang back in the center?

3. What causes collodion prints to curl when placed in water, and is there a remedy? Yesterday I toned some collodion paper and it curled just about as badly as some used three years ago, and the first two washing waters were as hot as the hands could stand, also some, (as I supposed) gel. paper, B & P. curled badly when transferred from the washing water to the toning bath; what would cause that?

4. If it is necessary to add an alkali to the chloride of gold to tone correctly where does the consistency of the acetate bath come in.

5. Why does a print turn red in burnishing if it is not what they call bone dry?

6. How long will ready sensitized paper keep, that sold by Scovill & Adams for instance? There is no use to sensitize it for my amateur work, for the weather is too rank here now-a-days to use it.

80 *Answer.*—1. Moisture in the store-room, or what is more likely the case, the manufacturer had the paper packed before being perfectly dry, or faults in coating the paper with emulsion.

2. We never encountered that trouble, but suppose the edges of the print were submerged in the solution while the centre bulged out and came not in thorough contact with the bath.

3. That is one of the great objections to collodion emulsion papers. They are always apt to curl up. To guard against curling wash in tepid water, to which a trifle of bi-carbonate of soda has been added, but the soda must be washed off again also in tepid water before toning is done. Gelatine paper never curls.

4. Acetates, borates, tungstates are of slightly alkaline reaction. By adding either of them to the gold bath, its acidity is neutralized.

5. This only occurs when the burnishing tool is excessively hot. Great heat will scorch the albumen or gelatine film.

6. About four or five months, if kept with all possible precautions, that is store it away in a cool and dry room, and wrap the paper in blotting paper saturated with a solution of sodium carbonate and dried.

81 J. L. Will you kindly let me know if the distance that a stop should be placed in front of a single landscape lens with a focal length of 4 inches from centre of lens to ground-glass.

81 *Answer.*—The stop on a single lens is usually placed in front at a distance of $\frac{1}{5}$ to $\frac{1}{7}$ of the focal length. The rule is not absolute, however, as it is quite possible it may give a flare spot at that distance, this being dependent upon the curves of the lens. Other points to be taken into consideration are that the nearer the stop is to the lens, the less will be the distortion at the edges of the plate, and the larger the plate covered, while the further it is away (within certain limits) the flatter the field and better the definition. The distance, therefore, can only be accurately determined by actual experiment.

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W. I. LINCOLN ADAMS, Editor.

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"I have put the Swift lenses through hard, and they please me very much. They are another power that I gladly welcome. * * * I would not part with them for double their cost," writes Mr. B. W. Kilburn, World's Fair, Chicago, Ill.

Swift Lenses.—"I enclose two proofs made instantaneously with the Swift lenses. They are most perfect negatives, all that can be desired. I have made lots of interiors with them, and find the lenses just as perfect for that work, and as good, and perhaps better than any lens I have got. I am pleased with them, you may be sure."—B. W. KILBURN.

Correspondence.

APPRECIATED.

NEW ORLEANS, June 5, 1893.

"IN regard to the Henry Clay camera I can express very briefly all in a nutshell—it has surpassed my expectations. The mechanism, finish and general workmanship have certainly exceeded what I had led myself to look for; and the adjustment of shutter to lens, and both to the instrument, together with their interworkings, have more than come up to the ideas I tried, in my various letters, to express to you; and I wish to thank you extremely for the great care and pains you have taken in the getting up of this outfit, and to assure you that the result of your work has been fully and highly appreciated."

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CHEAP.—Portable frame gallery, with contents, including two first-class cameras and Eureka Burnisher; will sell contents separately. Lock Box 68, Rochester, N. Y.

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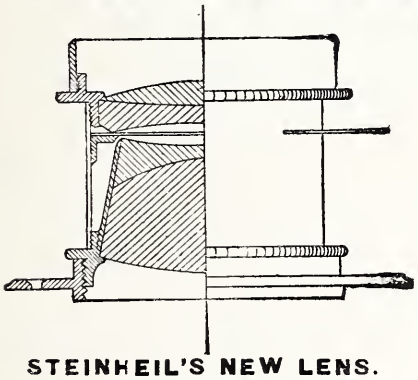
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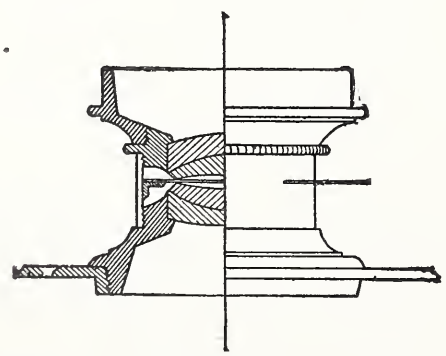
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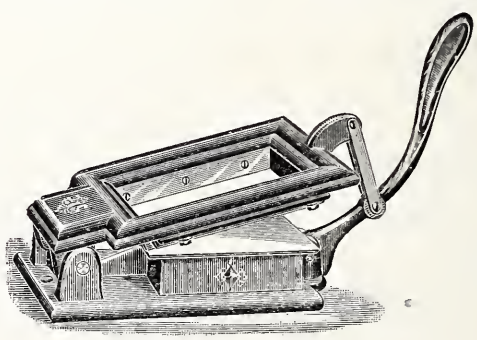
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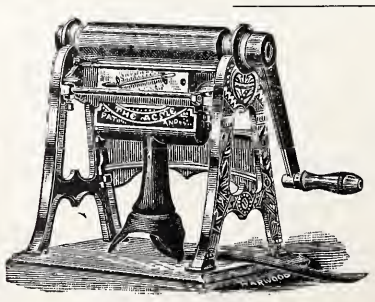
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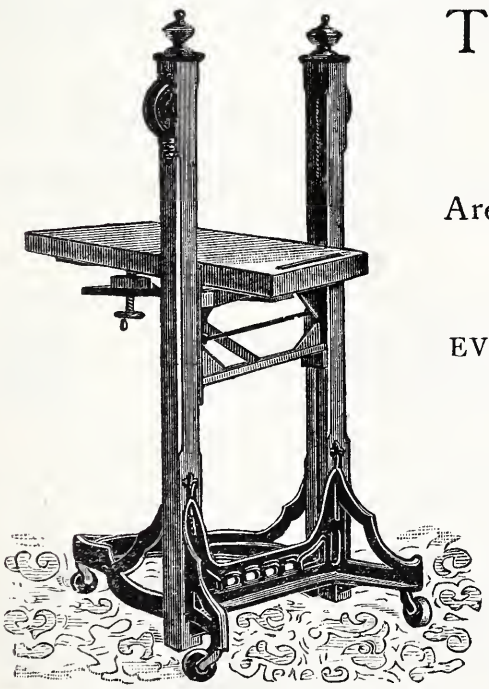
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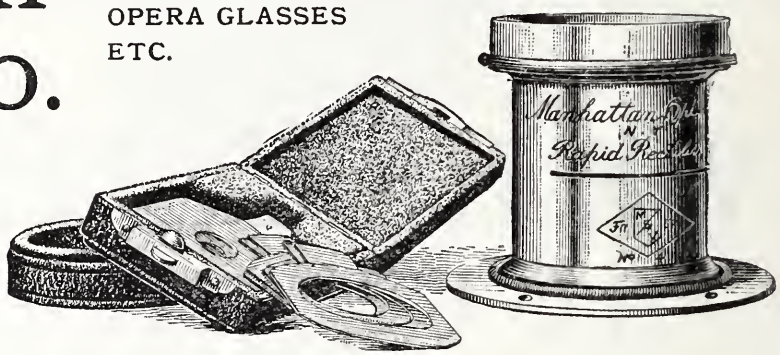
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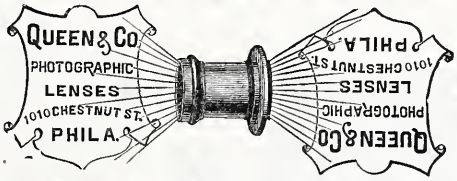
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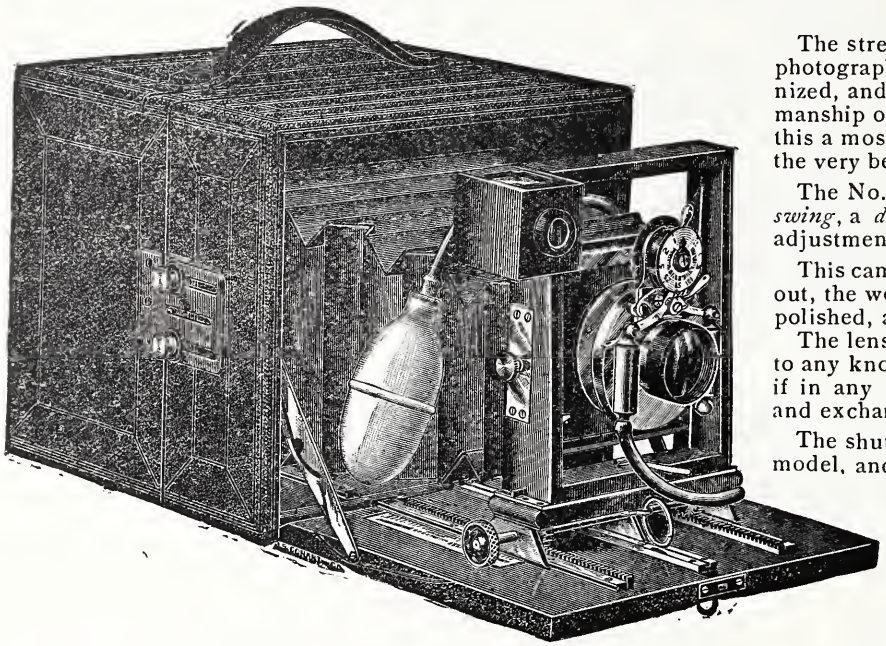
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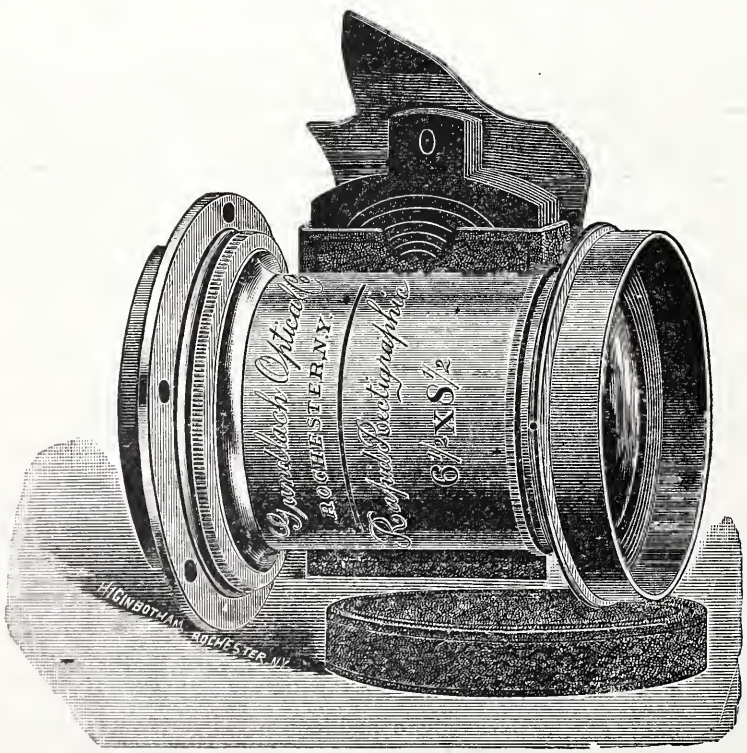
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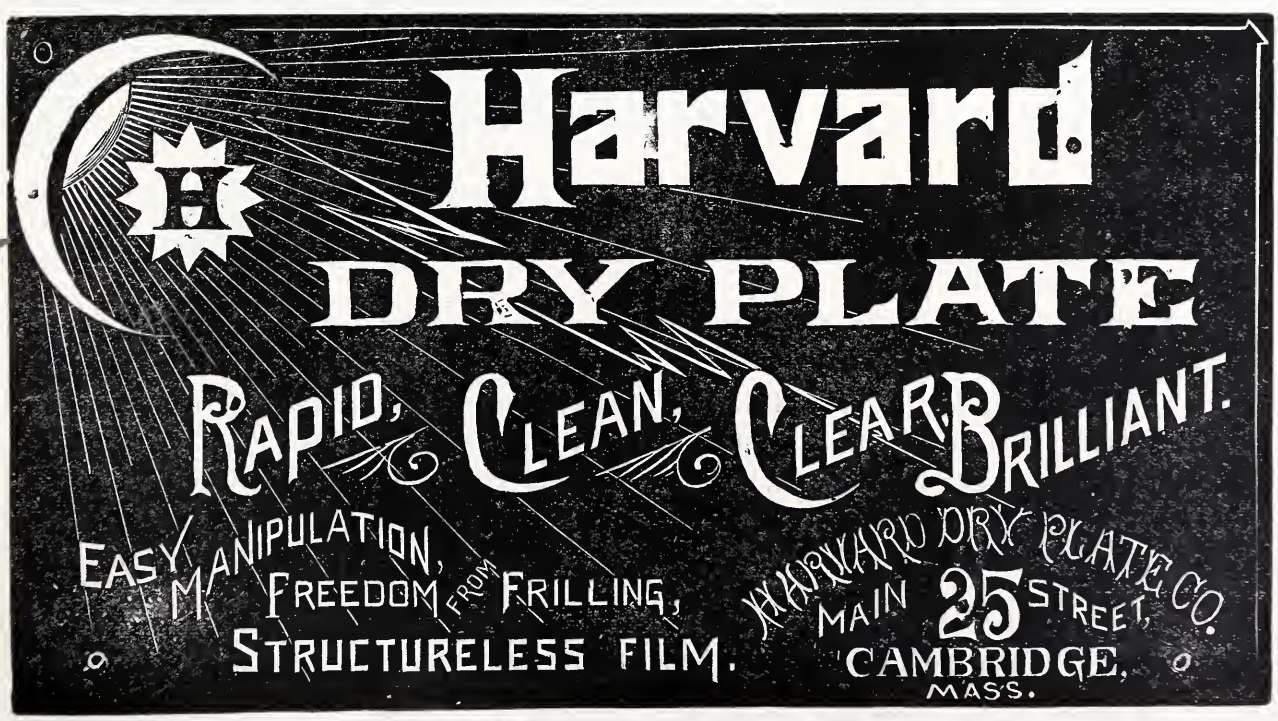
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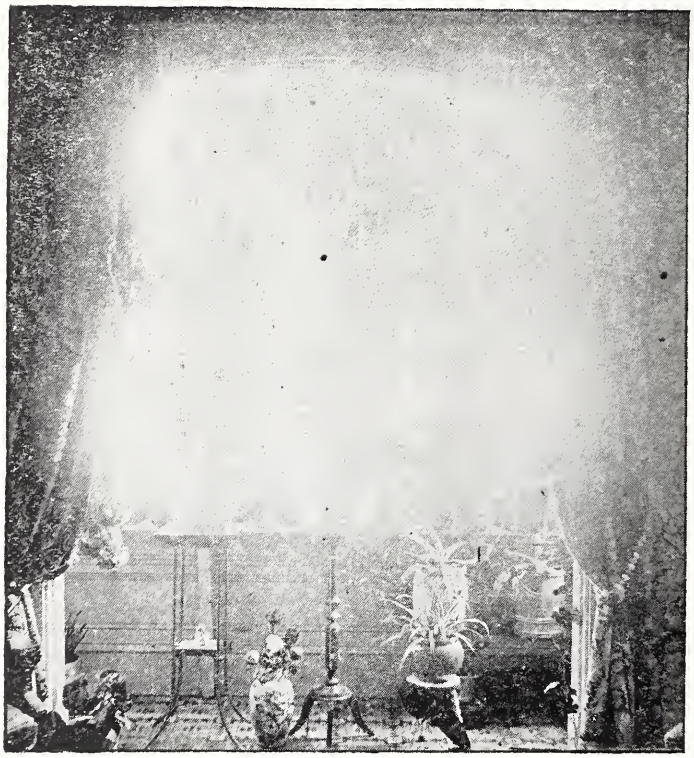
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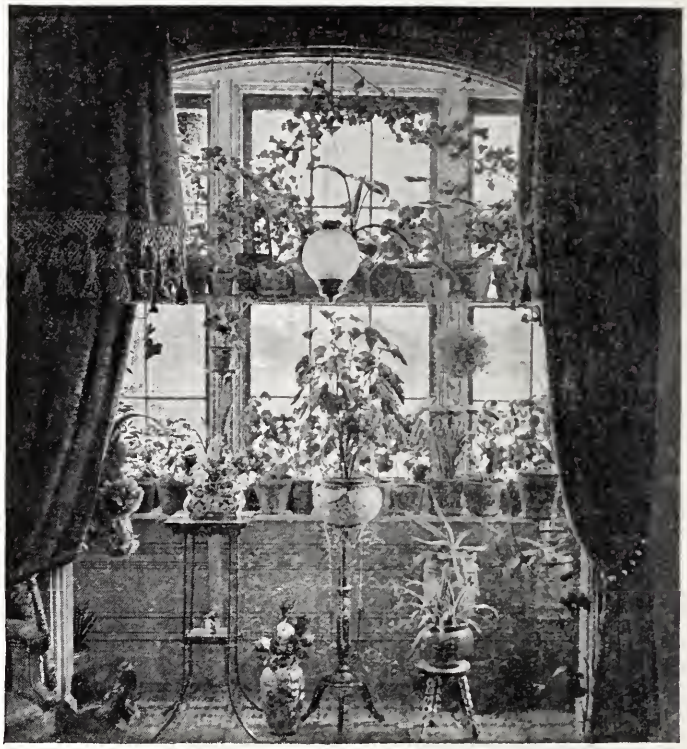
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RICHLAND FARM PETS

PARKERSBURG, ILL

PHOTOGRAPHED BY OWNER, OLIVER J BAILEY

THE PHOTOGRAPHIC TIMES.

VOL. XXIII. JUNE 30, 1893. No. 615.

RICHLAND FARM PETS.

OUR photogravure frontispiece is from a 4 x 5 negative by Mr. O. J. Bailey, of Peoria, Ill.

It is a group of his own cattle made at "Richland Farm," near Olney, Ill., being a snap-shot with a hand camera.

The attention of the animals was attracted by a little girl with her collie dog. This accounts for the intensely attentive look of the cattle. The dog also assisted in the grouping of the cows. The plate was developed by Mr. Bailey with hydrochinon.

THE ANTIQUITY OF THE LENS.

MONSIEUR EDOUARD FOURDRIGNIER has an article in the *Photo Club de Paris*, entitled "A Few Words on the Knowledge of Optics possessed by the Ancients," in which he says: "Looking back at the works written by the ancients, we may discover very many ideas and germs which we, in the present century, presumptuously imagine that we have been the first to discover. With regard to photography, it is certain that the application of the dark chamber and the lens and also the sensibility of certain substances to light was well known."

With regard to the antiquity of the lens the author says: "If we are to believe C. P. Gaubil, quoted by M. de Paravey in his "Chronologie Chinoise," the Emperor Chan, who reigned 2,283 B. C used enlarging lenses in the form of a telescope in order to be able to get a better view of the planets."

The use of lenses has also been traced to the Chinese moralist Confucius, 748 B. C. A glass case in the Assyrian section of the British Museum contains a piece of rock crystal formed into the shape of a plano-convex lens 1½ inches in diameter and $\frac{9}{10}$ inches thick. This was discovered in the ruin called Nimroud. It gives a focus of 4½ inches. According to Sir David Brewster this lens has been designed for magnifying purposes. The date is about 700 B. C.

Plutarch speaks of instruments used by Archimedes "to manifest to the eye the largeness of the sun." Euclid's treatise on "Optics" appeared about 280 B. C. Other notices of lenses may be found scattered through the pages of antiquity, until the revival of science and learning in the twelfth century, when Alhazen is credited with having written on the refraction of rays and the magnifying power of lenses. Vitellus, a Pole, also wrote a treatise on lenses about 1270. The invention of spectacles has, however, been credited to Roger Bacon (1250), but Pliny mentions that Nero, who was myopic, used glasses when he watched the fights of the gladiators.

To prove the knowledge of the lens and dark chamber possessed by the ancients, M. Fourdrignier quotes two extracts from Aristophanes' comedy of Nuées, in which, during a conversation between Socrates and Strepsiades, an illusion is made to similar contrivances.

The first lenses of which it is possible to discover any reliable record are those invented by the Florentine Salvine degli Armati, who died 1317.

Baptista Porta (1560), the inventor of the camera obscura, states: "If you know how to combine a convex and a concave glass, one of each sort, you will see far and near objects larger and clearer.

It was not, however, until the time of John Dollond (born 1706, died 1761), that perfect lenses were found, for he it was who discovered the method of achromatizing them by combining glasses of different dispersive power.

A SELF-TONING PAPER.

ONCE again the idea of preparing albumen paper containing the gold salt and an alkaline chloride has been brought forward. Mons. P. Mercier, in *La Photographie*, is the latest advocate of

this process, and certainly his method appears to us the most reasonable of any we have heard of. In preparing the paper he incorporates with the albumen an alkaline chloride and a soluble gold salt, so that when subjected to the bath of nitrate of silver, chloride of silver is formed, and along with it a gold oxide, which is reduced to the metallic state in the fixing bath, partly substituting the silver deposit of the print. The formulas he employs is as follows:

Chloride of gold	4 grammes
Chloride of sodium	10 grammes
Chloride of Lithium	10 grammes
Ammonium	10 grammes
Distilled water	1000 cc.m.

Or,

Chloride of gold	4 grammes
Precipitated chalk	10 grammes
Water	1000 cc.m.

After heating the solution to boiling point add

Chloride of potassium	300 grammes*

Paper prepared with either of these solutions is floated for two minutes upon this silver bath:

Silver nitrate	150 grammes
Boric acid	10 grammes
Chloride of sodium	20 grammes
Distilled water	1000 cc.m.

After being dried the paper is immersed for a few minutes in

Citric acid	5 grammes
Citrate sodium	25 grammes
Distilled water	1000 cc.m.

To make albumen paper with the same property, the method above described remains the same, but in the place of the water of the gold solution, albumen is substituted. Silvering is done as with ordinary albumen paper.

EDITORIAL NOTES.

The practicing class of the Chautauqua School of Photography will be opened on July 15th. Unavoidable circumstances have this year prevented the Instructor from going as early as usual to the Assembly grounds, and the session of the school will consequently be abbreviated. Nevertheless, the prospects for a successful season are quite encouraging, as a large number of applications to join have already been received.

We are quite proud of our protegé, the Chautauqua School, and the motto: "Vivat, floreat, crescat," appears to be well applied to the institution. The number of students increases from year to year, and many of our most successful amateurs, and quite a number of professionals, now doing a lucrative business, are, or have been Chautauqua scholars. The corresponding class has made the institution cosmopolitan, every State and Territory of the American Union is represented by students, and almost every part of the world has sent a contingent. Among the recently admitted students we may note a native Hindostanee from Bombay and an American missionary in Angola, West of Africa.

* 30 grammes is probably meant.—Ed.

The camera is not universally considered to be a life-saving apparatus, but on more than one occasion photography has been the means of saving some unlucky individual. Dr. Jeserich, in his paper on "Photography and Crime," relates how by photographing some of the hair found in the hand of a murdered woman, which she had evidently dragged from the head of her murderer in her struggle for life, he was able to prove the innocence of a man against whom circumstantial evidence was very strong and who would in all probability have suffered the death penalty.

A somewhat similar case is reported in one of the Sydney papers, showing how the life of an innocent man charged with murder was saved by an amateur photographer: "Two men were spending a holiday, camping in the bush, and they were eventually joined by a third man, whom they were mutually acquainted with. A general quarrel shortly after ensues. One of the men thereupon quits the camp in a passion, and returns home, leaving, however, his rifle behind him in the hands of the last comer. This man, filled with hatred, at last shoots his companion, leaves the gun lying on the ground, and makes himself scarce. The murder being discovered, suspicion falls upon the owner of the gun, for the third man manages to prove an alibi, and the case goes hard against the accused, notwithstanding his assertion of innocence, and that the third man was present at the camp on that particular day. At a critical moment some photographs are handed round, which were taken by a gentleman who on that day had been taking views in the neighborhood, and who seeing the camp, and finding the attitudes of the men so natural and picturesque, had silently crept up, and exposing a plate without the knowledge of the three men, had gone on his way rejoicing. It was thus proved beyond a doubt that the three men were at the camp together at the time named, for the third man was seen standing up with the gun

THE GETTY CENTER

under his arm, as the wrongly accused man had described. The real murderer, finding no loop-hole of escape, then confessed, and the innocent man was acquitted.

A NOVEL method of producing artificial cloud effects was described by one of the members at a recent meeting of the Vienna Photographic Club. He covers a drawing board over with white paper and studs it at regular intervals with long headless drawing pins. The board is slightly inclined in a backward direction and the pins are covered over with large flakes of wadding. Over the board is fixed a small incandescent lamp. If the room be otherwise darkened, the light shining on the cotton wool will produce the effect of natural clouds. In photographing the image should not be focused too sharply and the cloud negatives thus obtained can be used for printing in landscape photographs.

CLEMENT J. LEAPER, writing upon the subject of reducers, says he prefers one made of potassium cyanide, ½ ounce dissolved in 10 ounces of water, and 2 drachms of bromine water added. The negative is placed in this until the reduction is sufficient; it is then removed and washed well. If there is any yellow stain, it can be removed by putting the negative into hypo for a little while, washing well, and afterwards into an acid clearing bath.

IT IS desirable when performing exact developing experiments with ammonia as the alkali that its absolute causticity, *i. e.*, freedom from carbonic acid should be assured. Herr J. Hertkorn in the *Chemiker Zeitung* proposes to test for the presence of this compound by the aid of lime-water. When a suspected sample of ammonia is mixed with that reagent, only a very slight turpidity should be exhibited on boiling the mixture.

TO EXAMINE gelatine dry-plates to ascertain which haloids are present, often fails in the province of the photographic chemist. In the second edition of Prof. F. P. Venable's *Qualitative Analysis* Mr. F. P. Dunnington's method is given for detecting iodine, bromine, or chlorine. His procedure is thus stated. From a solution acidified with nitric acid precipitate the silver salts of these haloids with silver nitric solution ; having filtered off and washed this precipitate, treat it in a test glass with a few drops of very dilute sulphuric acid and a bit of zinc ; when the dark spongy mass of metallic silver is formed, pour off the solution of the zinc salts, examine it for iodide, bromide, and chloride by the method of Prof. Edward Hart. It will be readily seen how the process will be simplified in photo working, the silver salts being already present only needing the gelatine to be removed with hot water.

THE use of glass flasks with a file or diamond cut in the neck for measuring exact quantities of liquids is well known to practical chemists, though little employed by photographers, whose measurements usually do not need such great exactitude. There are, however, occasions when such minuteness of accuracy is desirable, and those who employ such flasks will thank Mr. Alex. F. Reid, who, in the *Chemical News*, has described an addition to the flasks which will obviate the difficulty of obtaining the liquid exactly at the level of the cut or scratch. His plan is simple in the extreme. He merely makes a loose-fitting india-rubber or wooden plug with a flange to rest in the mouth of the flask, the plug being made of such size, or dipping so far into the liquid, that the volume of the part that goes in the flask has the same volume as the part above the marks. To use it the flask is filled unnecessarily full, the plug inserted, and then removed. The surplus liquid overflows and the rest will be found to be just at the required level.

IN a lecture at the Royal Institution of Great Britain, Professor Dewar, whose researches and public experiments upon the liquefaction and solidification of gases constitute some of the most marvelous results of scientific research this or any century has seen, showed that at temperatures 200 deg. below zero Centigrade the molecules of matter seemed to be almost "dead matter," liquid oxygen, for instance, having no action upon a piece of phosphorous dropped into it. He had previously stated that at these marvelously temperatures all chemical action ceased, but now desired to qualify what he had said ; for he found that even at 200 deg. C., a photographic plate was acted upon by light when placed in liquid oxygen. It has thus remained to photography to show that its work is manifest at a degree of cold which nullifies all other chemical action.

RIVALS.

FIRST PHOTOGRAPHER: "Well, old man, how's business?"

Second Photographer : "Oh, first rate. Got a commission this morning from a very rich man. Wants his children photographed very badly.

First Photographer : "Well, you're just the man for the job."

"AN ADVENTURE IN PHOTOGRAPHY."

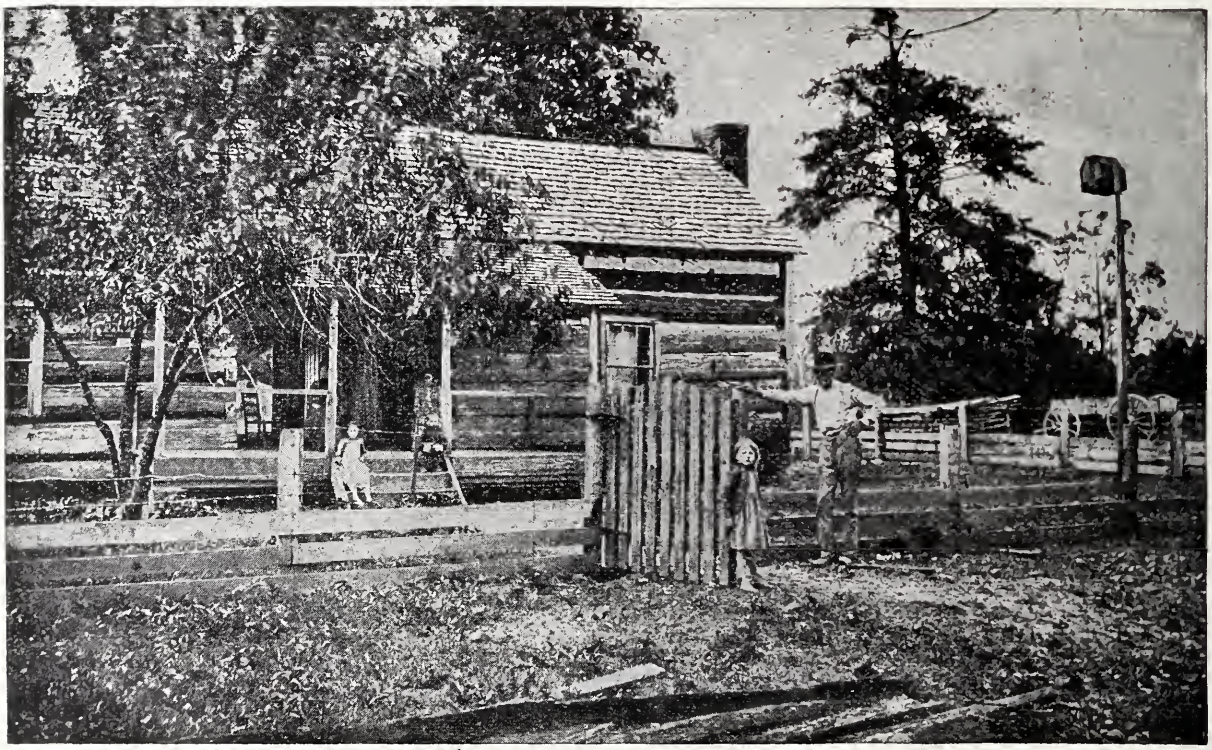
By Octave Thanet. New York: Charles Scribner's Sons.

A REVIEW.

When a trained writer undertakes a work in an unfamiliar field the result may be an entertaining book from a literary standpoint, but will hardly be instructive as a practical guide. This is the case with the present book. It is well written and makes entertaining reading. It is, moreover, attractively illustrated by half tones "from photographs by the adventurer," though the pictures are for the most part rather uninteresting in subject and certainly very uneven in execution.

"A Country Road;" "A Library Corner," and others.

The author is rather unsystematic in accrediting the sources from which she obtains much of her information. At first all her knowledge seemed to have been acquired from "the little book" which accompanied her outfit, though she does not state the name or author of the work. Later, it seems, "Jane" had discarded the little book. "I don't know which one it was threw it into the fire," she writes, "though I know which one was most likely to do such a thing. It matters not, it was gone; and Jane now pinned her faith to 'The Photographic Times Annual.'" Later we find frequent



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AN ARKANSAS RENTER'S CABIN.

The author adopts the rather original method of instructing by showing her failures as well as her successes in illustrations, which in some instances decidedly mar the appearance of the book, as in the pictures "Once the Focusing Cloth Slipped," which shows one corner totally obscured by the focusing cloth falling from the lens; "A Bad Light," which is certainly very bad; and also "A Good Light," which is almost as bad, notwithstanding its more hopeful title; "How to Focus Portraits," and others. On the other hand we have nothing but praise for such pictures as "Larned," which serves as a frontispiece to the book; "Where we Threw the Lantern;" "At Sunset" (an Emersonian picture); "The Wagon and Six Oxen had Toiled Through the Swamp;"

reference to "The Annual," though the formulas, which she prints in profusion, many of which were taken from this publication, are nowhere accredited to it.

The adventurers start with the "Rochester Optical Company's Model Camera." * * * "The year following we bought a handsome fifty dollar camera and a fifty dollar lens;" (was it the Henry Clay?) They also used an "Anthony's washing box," which did not seem to give them much satisfaction, "though it looked so neat and comfortable, and was so in accord with the principles of science." They seemed to pin their faith to the Waterbury lens throughout their adventures, and also to Carbutt's plates, especially the B plate, which the author enthusiastically recommends to her readers.

She mentions Mr. Carbutt's name no less than six times on one page of her little book, and it frequently appears throughout the entire volume.

"To Amateurs Only" is the title to the chapter in which is summed up "the practical rules of life" adopted by the author, some of which are, to say the least, original, as, for instance, the following:

"Do not focus through your largest diaphragm and then put another stop in and expose the picture without focusing again through the smaller stop. You may have reason to change the focus with a small stop (?). The following advice is certainly to be commended: "Buy all the photographic books and papers that you can afford, and read them." (Our publishers would say that *one* good paper, which covers the ground thoroughly, is all that is necessary.) This is also good: "Constantly, while you walk, or ride, or drive, study the scenery with an imaginary lens between you and it. Compose imaginary pictures out of the landscape. Notice the varied light. In fine, if you can't be an artist, be as much of an artist as you can. And whether you have learned to draw real pictures with the sun or not, you surely will learn to behold new beauties in the familiar face that blesses us every day."



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A COUNTRY ROAD.

The book concludes with this cheerful confession on the part of "Jane." "'I think,' says the author, "what we have gained from photography is worth all the money and the trouble it has cost us,' said I to Jane.

"'It is worth more!' said Jane.

THE DISCUSSION ON IVES' LECTURE ON COMPOSITE HELIOCHROMY.

The following is an abridged report of the interesting discussion that took place at the conclusion of Mr. Ives' lecture at the Society of Arts:

Mr. J. Wilson Swan congratulated Mr. Ives on the marked progress he had made since he last showed his results in that room. He had told them plainly the limits of his ambition, that of attaining a practical method of producing what he thought was attainable in the direction of color photography. Popularly, no doubt, photography in natural colors meant something different from what had been shown that evening; it meant a process by which not only light and shade, and the natural forms, but also the colors of the objects, would be produced directly on the sensitive surface. Some sanguine people conceived that such a thing was not impossible, but many farseeing and able men considered it to be quite unattainable, and these would certainly not be the discoverers. The path of progress and discovery was illuminated by the light of hope, and to search for any object hopelessly was not the way to find it. He believed that the feeling that color photography was unattainable had restricted experiment, and, as without experiment very little progress could be made, it was not wonderful that color photography, in this ideal sense, had not yet been realized.

The Chairman suggested that it would be interesting if Mr. Ives could show the colors of the

color-screen which he used in his camera, and also the colors he used to project the pictures on the screen.

Mr. Ives said the images which formed the chromogram had no color themselves; they were only a register of colors, and might be compared to the wax cylinder in a phonograph, which contained no sounds, though it registered them, and, on putting the instrument in operation, reproduced them. In the triple photograph there was a record of the colors, and when it was put into the heliochromoscope, they were brought back to the eye. One image was called the red, not because it was red, which it was not, but because it represented the relative amount of action on the fundamental red sensation. It represented the effect of light coming from the object upon the fundamental red sensation. The same with the blue and the green. He had not attempted to go into the science of the subject that evening, because he did so very carefully last year, when he explained what various colors of the spectrum excited each fundamental sensation. The sensation itself was of a perfectly simple color. The screen to produce the effect of the red sensation in the negative must transmit sufficient not only of the red, but of the orange-yellow, and yellow-green rays, all of which had the power to excite that sensation. The exact color of the screens in the camera depended on the color sensitiveness of the photographic plate. If the latter were twice as sensitive to red as to orange, while, on the other hand, the fundamental red sensation was affected twice as much by the orange rays as by the red, it would evidently be necessary to use a screen which cut out some of the red rays, which would otherwise have a disproportionately strong effect. The plates actually used were many times more sensitive to orange than to red, and it was necessary in practice, in order that the red rays should have time to do their share of the work, that the color screen should cut off a very large proportion of the orange rays. The screens were tested by photographing the solar spectrum, and it was assumed that they were right when the photograph of the spectrum showed a distribution of density which corresponded to a curve representing the power of the different rays to excite the respective fundamental sensations. The heliochromoscope and lantern screens, on the other hand, were, like the fundamental sensations themselves, of pure simple colors. The subject was very difficult to follow for any one who had not made a special study of it. As he had stated in the paper, he had devised a camera with which the triple photograph could be made at one exposure of one sensitive plate. He had also explained that the tint of yellow-green on the edge of the water pitcher was due to a defect in the development, not to anything inherent in the process itself.



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A LIBRARY CORNER.

The Chairman said he believed he was one of the first to see the results of Mr. Ives's work last year, and he must say that what he had now brought forward showed a very decided advance, and was not only very interesting, but of scientific value. One could not help seeing that Mr. Ives had worked on thoroughly scientific principles. It was not every one who would undertake to find out what the three fundamental color sensations were, and where they were situated in the spectrum. A good many who had worked in this direction had not taken so

much trouble, and some had selected colors which did not really excite the fundamental sensations. The three which Mr. Ives had chosen seemed to be very near the truth, as far as was at present known. The red sensation was stimulated by the red which lay near the limit of the solar spectrum, and when you got as far as the C line, where the red was pretty bright, there was a very small contamination of green with it ; but so small that you might use it, without serious error, for over 90 per cent. of the color sensation produced in the eye would be caused by the stimulation of the red-perceiving apparatus. The green was situated not in the yellow-green, but was a distinct green of itself ; probably only one man in twenty-five had ever felt the true fundamental green sensation at all, because they must be color-blind in order to do so ; the real fundamental sensation was so much mixed up with white, that we only felt the green largely diluted. The blue-violet was the one at the far end of the spectrum, somewhere about G, and was very fairly represented by the color Mr. Ives had chosen. There were several very interesting points in the paper with regard to the modes of developing ; for instance, the fact that the image exposed to the red would not develop with hydroquinone as rapidly as blue did. This he had long been familiar with, and there was a scientific explanation of it which ought to be known, but which would take too long to detail now. Again, he had always held that, in some sensitive plates, the image formed by the green rays was principally formed in the eoside of silver ; it had often been combated, but he still held to it and was glad to find that Mr. Ives's experience confirmed him. Another interesting fact was the method of applying the developer. Mr. Ives said that he first thought the fact that the plate developed more in density at one part than another was due to its not being evenly coated; but directly he prevented the access of air to the outer portion during the process, the mischief vanished. That might teach a useful lesson to practical photographers. No one could have seen the heliochromoscope without being struck by the ingenuity of its construction, and the marvelous skill with which the reflecting surfaces were arranged. The little contrivances for getting rid of double images formed by reflection from the back and front of a plain glass mirror were admirable. Reflections from plain glass used for other work had bothered him so much that he had had to abandon such mirrors, and use the surface of a prism, but Mr. Ives had got rid of the evil in another way, and made the two images coincide by using a very slightly prismatic glass. The little instrument was a masterpiece of ingenuity, and he hoped that when Mr. Ives came again next year he would have still further developed this very instructive process. The time was evidently coming when people would not be content with ordinary photographs as lecture illustrations of machinery, or anything else, but would require all objects to be portrayed in their proper colors. He concluded by proposing a vote of thanks to Mr. Ives, which was carried unanimously.

THE ART AND PRACTICE OF GELATINO CHLORIDE PRINTING.

(*Continued from page* 328.)

PART I.

The Manufacture of the Paper.

CHAPTER VI.

Drying and Storing the Paper.

Some little care is required even in the drying of the coated paper as its quality can be materially effected in the process. After coating and allowing the superfluous emulsion to run back into the dish the paper is hung up in a room heated to about 80 deg. Fahr. When floating the paper some operators prefer to remove it from the emulsion and immediately lay it down upon a thick glass plate previously levelled until the emulsion is firmly set, when it is hung up to dry.

Strings or wires stretched across the room and threaded with wooden clips is a simple and convenient arrangement for hanging the paper to. These strings should not be too near to each other as it will retard the drying of the paper. The temperature of the room should be as already stated. If too cold the paper will dry with a duller surface and give poor, flat prints. If on the other hand the room be too warm the emulsion will melt and run from the paper.

In hanging the paper up to dry sheets of blotting board should be placed underneath to catch every drop of emulsion. These boards can be used over and over again, and finally burnt and the silver extracted. Indeed, it might be as well to remark here that all waste paper cuttings, etc., should be carefully saved and burnt, and the silver extracted from the ashes, or they should be sent to a refiner for that purpose. The waste emulsion should be poured on to the waste paper, and in that way it will dry on it, and the whole can be treated in the same manner.

The drying of the paper should occupy about three or four hours. The lower edge of the paper will usually have a ridge of thick emulsion which will take much longer. This can be cut off with a pair of scissors and the paper removed.

In removing the paper and all subsequent operations with it, avoid as much as possible touching the prepared surface with the fingers, however clean you may imagine them to be.

If prepared with our formula the paper should keep for several months provided, of course, the usual precaution of preserving it from light and moisture, are taken.

By examining it at different angles any flaws in the film can be detected and these should be marked to avoid using that part.

The edge should be trimmed and the paper rolled up, face outwards, wrapped in chemically pure white paper, and then with yellow and placed in a tin case. In this condition the paper should keep a great length of time.

Another method is to cut the paper up into the sizes required, make them up into small packets and place in a copying press or under a heavy weight so as to effectually exclude all air from between the sheets.

When hung up to dry the paper is, of course, in a very sticky condition, so that it is necessary to take every precaution to avoid dirt or dust being disturbed and allowed to float about the atmosphere, for it will rapidly find its way to the paper and there adhere.

Particular precautions must be taken against metallic dust reaching the coated paper. We once endeavored to coat some paper and were annoyed to find it covered over with black spots. The cause of these we afterwards discovered was due to fine metal particles which somehow or other managed to find their way from a metal foundry and engineering works not far off. This will serve to show the precautions against foreign matter that are necessary.

All sensitized paper should be stored in a drawer or upon a shelf situated low down in a room. Paper placed upon a high shelf is subjected to the action of the combustion gases which will tend to destroy it.

Walter E. Woodbury.

(*To be continued.*)

A Correction.—In our article on MM. Lumière's experiments in Heliochromy in last week's issue, a printer's error unfortunately crept in. The formula B of the emulsion should read "Distilled water 25 grammes, Bromide of potassium 2·3 grammes," not "23 grammes," as appeared.

THE CONVERSAZIONE OF THE ROYAL SOCIETY.

Photographs Demonstrating the Action of Light on Bacteria Spores.

At the recent conversazione of the Royal Society, under the presidency of Lord Kelvin, Professor H. Marshall Ward, F.R.S., by the aid of the electric lantern, exhibited some preparations and photographs demonstrating the action of solar and electric light upon the spores of bacteria and fungi. He showed the methods employed to prove (1) that sunlight kills the spores of bacteria and fungi; (2) that the electric light also kills them; (3) what rays are most effective; (4) that the action is really direct on the spores, and not indirect or owing to any chemical action of the medium; (5) that the action depends on the time of exposure; (6) the intensity of the light; and (7) illustrated some details affecting the results and their practical application.

The researches of Mr. Ward proved that the action of solar light at all times of the year kills these spores, whether in air or in water, in proportion to its intensity, and if it acts for a sufficient length of time; that time in air in good sunlight is unusually two but sometimes three hours. The electric arc light acts in a longer time, and the more rapidly when not passed through glass; thin sheets of quartz crystal do not much interfere with the action. His method of operating may be explained by describing his experiments with *Bacillus anthracis*.

That exposure to light leads to the destruction of the spores of *Bacillus anthracis* was proved by experiment by Dawnes and Blunt in 1877 and 1878, but Mr. Ward went farther into the subject, for his experimental evidence goes in the direction of proving that the most potent factor in the purification of the air and rivers of bacteria is sunlight. A test tube of Thames water, with thousands of anthrax spores in it, will contain none living after exposure for a few days to the weak light of the sun. He infected ordinary agar with anthrax spores, and coated plates as usual, covering each plate with a stencil plate on the lower face, and wrapped the rest of the plate in dull black paper, so that the rays of the sun could only reach the agar through the letter or other design cut in the stencil plate. Such plates were then exposed to the October sun for from two to six hours, and afterwards they were incubated for, at least, 48 hours, at a temperature of 20 deg. C. Colonies of anthrax were then found densely covering the plate, except where the light had acted; there the plates were perfectly clear, and the spores killed. He performed other experiments to prove that the results were not due to temperature. No tube cultures could be obtained from the gelatine in the transparent part of the plate. The electric light was found to act more feebly than sunlight. He obtained halation with some of these bacteria plates, due to reflections from the surface of the glass.

He also tried experiments with pieces of colored glass placed between the films of spores and the source of light, and found that the blue and violet rays were most active in killing the germs; red and orange light had little influence in the matter.

Developing Images Produced by Electricity.

The Rev. Frederick J. Smith, M. A., the Millard lecturer in mechanics at Trinity College, Oxford, exhibited the results of his experiments in what he called "inducto-

script," because he thought that that name suggested the nature of the process employed in taking the pictures shown. He stated that the breath figures of Möser, Riess, and Karsten, led him in 1878 to try an experiment to determine the action of an electrical discharge through a coin placed upon a sensitive photographic plate, and that upon development he obtained an imperfect image. During the past two years, having had electricity of much higher potential at his command, he tried therewith to produce figures like those obtained by Karsten and failed, probably because the potential difference was not sufficient; in these experiments he used plain glass.

Next he tried ordinary dry photographic plates, proceeding in exactly the same manner as before, and on development an exact image of the medal came out, proving that a potential difference greatly under that of a jar discharge, or that of an electrical machine, would upset, he said,the chemical equilibrium of the photographic plate. Several factors appeared to be contributing to the result, namely, the potential difference, the acriform medium, the pressure, the temperature, and the previous history of the plate. He exhibited results obtained by varying the conditions just stated.

The coin, or engraved plate, was arranged so as to form one of the metallic coatings of an electrical condenser, and the photographic plate or prepared paper was placed between the two coatings of the condenser. With rapid charge and discharge the photographic surface is chemically altered; in the case of paper, particles of the coating are driven into its fabric. He also used wood blocks rendered chemically conducting by plumbago. He exhibited some good pictures obtained by his method from engraved copper plates.

The following are the results of his investigations down to the latest date: I. When the process was conducted in different gases, far the best results were obtained in oxygen. II. The effect of pressure. No picture could be obtained in a good vacuum, only the circular shape of the coin. As the pressure increased towards the normal the pictures became more perfect. III. The output of the transformer was regulated by resistences put into the primary circuit, also by the rate at which the reversing commutator was driven; the reversing commutator is similar to those used on the early Siemen's machine, and driven from a belt in the laboratory. IV. The temperature varied between 5 deg. C and 100 deg. C. Perhaps the effects may have produced more quickly at the higher temperature, but no very significant change was apparent. V. Similar experiments have been performed in other gases, and under considerable pressure, up to 10 atoms. The increase of pressure improves definition. VI. In addition to pictures on photo-plates, impressions have been obtained on bromide paper, and other papers direct. When wood blocks have been used, they have been coated with plumbago to render them conductors. The variation in color is produced by using certain metallic sulphides.

A New Portable Photometer.

Sir David Salomans, Bart., exhibited a new photometer, in outward appearance bearing some resemblance to an opera-glass mounted upon a stand. All the metal work was in aluminium, for the sake of lightness. In each of the tubes are two Nicol prisms; through those in the one tube the light to be tested is examined, through those in the other tube, the light of a standard candle is viewed. In each tube the polarizer, instead of the analyzer, is moved when making observations. The measurements are made by revolving whichever polarizer faces the brighter screen, until the two lights appear to possess the same degree of intensity, then by means of suitable scales on the instrument, and taking into account the distances of the two lights from the photometer, the intensity of the light under test is ascertained by calculation.

The sheltered standard candle is contained in a tube, and driven up by a spring in the usual way as it burns. The chimney is carried in a special form of gimbals, so that no matter what inclination may be given to the binocula arrangement, the candle will always remain vertical, since the gimbals are attached to the rest of the instrument by means of an arm. All the metallic work of the candle-bearing part of the apparatus is also of aluminium.

Recording the Temperatures of Furnaces by Photography.

Professor Roberts-Austen, C.B., of the Mint, exhibited a camera and pyrometer for continuously recording the varying temperatures of furnaces by means of photography. He also exhibited some of curves thus produced in connection with the measurement of the temperatures of the hot blast supplied to blast furnaces smelting iron, and stated that the provision of these curves has already enabled notable economy to be effected in this important branch of metallurgy.

The apparatus consisted of a thermal couple, one element of which was a platinum wire and the other a wire of platinum alloyed with ten per cent. of rhodium. The current given out by this couple under varying temperatures was conducted to a dead-beat reflecting galvanometer at one end of a long mahogany camera; the galvanometer mirror reflected a vertical line of light to the other end of the camera, along which was a narrow horizontal slit, through which, therefore, a little square spot of light found its way, and when the mirror moved, the spot of light moved also. Behind the slit, in another dark box, was the usual recording cylinder, placed horizontally, covered with sensitive paper, and slowly turned by clockwork, so that, as the spot of light moved from right to left, or in the opposite direction as the heat of the furnace varied, a zig-zag line was produced upon the paper. A mirror, at an angle of forty-five degrees, could be interposed at will, as in some hand cameras, so as to throw the spot of light to the top of the camera, where it could be seen moving upon a ground glass screen, and its indications read off by the eye. By turning a switch, this instrument could be disconnected from one furnace and put in communication with another, containing another thermal couple and so on, with various furnaces in succession, to see how the temperatures were varying in any one of them.

The "Scotographoscope."

Mr. Cecil Carus-Wilson exhibited what he called a "scotographoscope" for enabling lecturers to demonstrate with chalks in a darkened room. A compartment encloses a lamp so arranged as to cast a pure white light upon the interior surface of the sheet of specially-prepared glass, which forms the front of the apparatus. In a darkened room, on removing the sliding screen, an intensely white surface is exposed, upon which chalks of any color can be

used in the ordinary way. Small chalk drawings are easily seen at a distance of a hundred feet or more, and they may be rapidly deleted by means of a damp sponge. The whole apparatus folds into a small compass for travelling.

A New Thermometer.

An alloy of the two metals potassium and sodium, is liquid at the ordinary temperature of the air, and can be used to indicate higher temperatures than does mercury, but no air must be allowed to get at the alloy, or it will oxidize, so the new thermometers are so made that in the vacuum at the top of the tube, nothing but a trace of nitrogen is left. The tubes are made of exceptionally hard glass, the temperature of softening of which is about 650 deg. C. These thermometers were exhibited by Mr. E. C. C. Baly and Mr. J. C. Chorley. The range of the thermometers is from 0 deg. to 620 deg. C., or 1,150 deg. F.

Photographing the Spectra of Flames.

Professor W. N. Hartley, F.R.S., exhibited photographs of the spectra of a flame from a Bessemer converter. They comprised the solar spectrum intended for reference, together with spectra of the Bessemer flame taken at consecutive periods of the "blow" as indicated by the time during which the plate was exposed in each case. The flame spectra were composed of (1) a continuous spectrum due to carbon monoxide; (2) a band spectrum belonging to metallic manganese; and (3) a line spectrum principally belonging to iron. Lines of potassium, sodium and manganese were also present. The photographs were taken at the Crewe Works of the London and North Western Railway Company, by permission of Mr. F. W. Webb. January, 1893, and had been enlarged ten diameters by the Autotype Company.

Miscellaneous Exhibits.

Captain W. de W. Abney and General Festing exhibited some experiments on the extinction of light and color. Sir J. B. Lawes, Bart, and Dr. J. H. Gilbert exhibited photographs of Swedish turnip, plants, natural size, grown in rotation, without manure, with mineral manure alone, and with mineral and nitrogenous manures together. They also exhibited photographs of the Rothamsted laboratory and sample house. Professor J. Norman Lockyer, F.R.S., exhibited the photographic spectra of some of the brighter stars, likewise two photographs, one of which represented a 6-inch objective prism of 45 deg. mounted in front of a 6-inch object glass, and the other represented the arrangement for electrically controlling the clock of the 10-inch refractor at South Kensington. Mr. Isaac Roberts exhibited five original negatives, also enlarged prints therefrom, the nebulæ and clusters of stars, taken by him with his 20-inch reflector. Mr. W. Topley, F.R.S., and Mr. R. Kerr exhibited maps and photographs illustrating the Sandgate landslip. The photographs showed the slipped masses of land, mainly in the Encombe mounds, and the damage done to houses and to groynes on the shore. Mr. E. Wethered exhibited some photo-micrographic lantern slides, illustrating the micro-organisms in limestone rocks, especially the remarkable structure known as *Girvanella*. Lord Armstrong demonstrated on the screen, by the aid of the electric lantern, some experiments to show the nature of the electric discharge in air and in water.

Correspondence.

To the Editor of The Photographic Times.

Dear Sir: The annual meeting of the Photographers' Association of Ohio will be held at Wertwein's Hall, Columbus, on August 8th, 9th and 10th. It is my desire that all of the photographers of the State should take advantage of this opportunity to meet the members of the profession in a social manner and discuss such questions as may be of mutual interest and advantage. The last meeting of the Association proved of the greatest advantage to all who were present, and I have every reason to believe that the next meeting will be of still greater benefit. There is no doubt that a State association may be made more beneficial for the members of the profession than any National organization could possibly be. With less routine business to transact those who are present will have more time to spend in the discussion of the many important questions that would be brought before the house.

One of the most promising features of the meeting will be the question box. This will be opened at every meeting and any one who is present may take advantage of it. Any photographer can realize the value of this department, and it is hoped that all will take advantage of it, for in this way the sessions may be made of mutual interest and advantage.

The photographers are also reminded of the importance of the suggested exhibit: If every person will forward six cabinets they will be properly judged and rated, and each one will have an opportunity to show his best work, making an exhibit that will be as interesting as it will be instructive.

The importance of this annual session and its value to every progressive photographer in the State cannot be over-estimated. If all will take an active interest in the meeting it cannot fail of success, and all will be ready to admit its value as an educational medium. All photographers, whether members of the Association or not, are cordially invited to be present.

Very respectfully,

J. S. Schneider,
President P. A. of O

Columbus, O., June 19, 1893.

Notes and News.

Whatever else you do don't fail to secure a copy of our Convention Number, published on the 14th of July next. We are going to try to make it the finest issue of a photographic magazine ever published. Whether we will succeed we will leave you to judge. It will contain *twenty-four* pages of readng matter, *four* full-page illustrations by different processes, a number of cuts in the text, and a host of interesting articles by the best writers. We confidentially advise you to order a few extra copies to send to your friends.

Milton B. Punnett, of Rochester, N. Y., who is at present studying chemistry at Vienna, has been elected a member of the Vienna Photographic Society.

The Souvenir Publishing Co. of Lynn, Mass., have issued very attractive photo-gelatine prints of Columbus' fleet from original negatives. Price, 50 cents each.

Mr. F. C. Beach, 361 Broadway, New York City, is getting up a petition for placing photographs and photographic materials on the free-list of the tariff act.

An English photographer recently secured an instantaneous picture, published in the *Graphic*, of a jocky being thrown while his horse was in the act of leaping a hurdle.

An American photographer announces that he takes photographs by a process that "occupies just half time of the instantaneous process." Process not for sale.—*The Australian Photographic Journal.*

The portrait of Edwin Booth which embellished our issue of June 16th was reproduced by the F. Gutekunst Co. of Philadelphia, and not by Mr. F. Gutekunst himself, as was incorrectly stated in the article. This is the portrait which Mr. Booth considered the best one ever made of him.

Liesegang's Aristogen, or developer for slightly printed aristotype prints, is (according to Schnauss) composed of:

Hydroquinone (7 per cent. alcoholic solution)..	4 parts
Sodium acetate (15 per cent. solution).....	8 parts
Water.	70 parts

A Newspaper Produced by Photography.—The first American to ever visit the Republic of Andorra was Lodian, of Connecticut.

He relates that there is not a single printing type in the entire Republic. Yet photography is in advance there. The only local periodical is first got up on styloed sheets, then photographed, and some 300 worked off this way.

Mr. G. D. Milburn, representing the Photo Materials Co. of Rochester, was in New York last week, and reported a bright outlook for the Trokonet at Chicago. Mr. Milburn personally compiled a most attractive little illustrated booklet which is being distributed on the American bound steamers of the various Transatlantic companies. Mr. Milburn also stated that an elegantly furnished and conveniently arranged dark-room in the Liberal Art Buildings at Chicago, will be at the disposal of patrons of the Photo Materials Co.

Donnadieu, in the *Photo Club de Paris*, after briefly considering the various terms used in connection with stereoscopic photography, gives the following summary.

Two photographic images of the same object	when combined in one give	the idea of relief either feeble, normal, or exaggerated.	Stereoscopy.
		the idea of reversed relief, *i. e.*, distance in front of foreground.	Pseudoscopy.
		absence of superposition and image indistinguishable.	Aphanascopy
	when badly combined, or not at all, give	absence of relief, the image the same as in an ordinary photograph.	Planoscopy.

More Free Dark-Rooms at the World's Fair.—We are reliably informed that a dark-room has been erected by the Keystone Dry Plate & Film Works and the Blair Camera Co., in conjunction with their exhibits, and that the use of same is free to all photographers who may desire to reload their holders with plates or films. John Carbutt, Jr., is in charge of the Keystone Dry Plate exhibit, and will render all aid in his power to those desiring to make use of the dark-room, and furnish information as to further supplies of the well-known Keystone plates and films.

We here give an illustration of the handsome diamond medal offered by the Murdock Aristotype Paper Co. for the finest single print, from any size portrait negative, made on their paper. The exhibits are to be made during the Photographers' Convention at Chicago, July 18th, 19th and 20th.



Photographing the Sun.—Prof. T. E. Thorpe, D.Sc., F.R.S., M.R.I., one of the four English scientists who formed the recent British expedition to Senegambia to make observations of the eclipse of the sun on 16th April last at the West African station, read a paper at the Royal Institution of Great Britain, giving an account of the experiences of the trip, the methods of making the observations, and the results so far as they are yet ascertained. Having explained the reasons of selecting Senegal as the station, and the difficulties undergone in reaching the spot, Professor Thorpe described the main objects of the expedition. Shortly, he said, it was to study the corona and the spectrum of the corona. The period of totality during which the observations could be made, lasted no longer than four minutes. In those brief moments a number of photographs under varying conditions were taken, and the results had proved most satis-

factory, despite the fact that a slight mist hung about at the time. Transparencies of the resulting photographs were thrown upon the screen. To the eye of the unlearned they were interesting, but to the learned they probably speak volumes, and no doubt all those present thoroughly understood the whole thing. The great point, the Professor explained, lay in the fact that the photographs taken by the Brazilian expedition exactly coincided with the African ones, so much so that they could not be told apart. That was of great importance in defining the physical nature of the corona. The Professor then gave a vivid account of the drilling and rehearsals they had practiced for the awful moment, and the thrilling excitement they had felt when the time arrived.

Photographic Societies.

At the Photographic Convention of England, to be held next month in Plymouth, the following papers will be read: "Recent Developers," by E. J. Wall; "Multiple Films," by S. H. Fry; "Artistic Expression with the Hand Camera," by J. Guardia; "Lantern-Slide Making," by C. L. Mitchell, M.D.; "Some Slides from the Marine Biological Laboratory," by J. T. Cunningham, M.A.; "The Special Properties of the Zeiss-Anastigmatic Lenses," by D. Paul Rudolf; "Photography in Relation to Medical Record and Demonstration," by A. Pringle; "Some Points in Connection with Development," by C. H. Bothamley; "On the Power of Compensating in Development for Variation in Exposure," by W. K. Burton; "Our Pictorial Failures," by the Rev. F. C. Lambert, M. A.; "Latitude in Exposure and Speed of Plates," by Dr. F. Hurter.

The Paterson Y. M. C. A. Camera Club.—The club was organized April, 1893. The officers of the club are: C. M. Giles, President; H. W. Gledhill, Vice-President; Charles D. Cooke, Corresponding Secretary; William Ginder, Recording Secretary; William M. Moore, Treasurer; F. B. Hoagland, Librarian. The club already (June) has thirty-three regular members and one honorary. The headquarters, as indicated by the name of the club, are in the Y. M. C. A. building, 141 Ellison Street, in which a dark-room is being fitted up, and which contains, besides its attractive parlors, reading room, and meeting rooms, a fine public hall with a seating capacity of about 900, which will be unusually well fitted for print and slide exhibits. The regular business meetings of the club will be held the first Monday evening of each month. Special meetings will be called as often as seems advisable, and outings will be arranged as often as practicable, especially on the legal holidays. It has been suggested that the old landmarks, the points of historic interest, and the best scenery in and about the city should be systematically photographed by the club. This will probably be accomplished by dividing the territory into sections, and assigning one to each member of the club. Prizes have been offered for the best work done on the Fourth of July outing. Exhibitions and public entertainments will be held during the fall and winter months.

Queries and Answers.

82 MIRIAM, T. B.—1. Does the Chautauqua School of Photography instruct in negative retouching?
2. If so, when can one be admitted to the class?
3. What average wages can be earned by a lady retoucher?

82 *Answer.*—1. Retouching is not a subject of instruction. But there is a class open from October to May under an excellent teacher and the auspices of the Cooper Union.

3. From $8.00 to $10.00 possibly.

83 LA SALLE had Carbutt A plates to make reproductions of engravings. The plates work well enough but frill very much, even at a temperature of solutions and water of 63 degs. F. What am I to do?

83 *Answer.*—Carbutt plates generally do not show any inclination to frill. Possibly your *modus operandi* deviates somewhat from that prescribed by the maker of the plate. We advise you to add to each two ounces of developer, one teaspoonful of saturated solution of tannin. It is better than alum, because at the same time it is a hardener and a developer also, and there is no fear of producing shrinking of the film.

84 PAINTER.—What is the quantity of the old German weight "Loth."

84 *Answer.*—One half ounce, equal to 240 grains.

85 L. A. N.—I am extremely careful to tone Bradfisch emulsion paper with Ehrmann's combined toning bath. I produce uniform tones in a large batch of prints, but when removing them from the wash water they are of the greatest possible variety of color. I can not understand that. Will you explain?

85 *Answer.*—When removing the print from the bath, it should be placed in running water. Toning bath will adhere to the print on removal, and if your first wash water is stagnant, and a large number of toned prints are in it, it really takes the character of a diluted toning bath, still active, till completely eliminated. Runing water not only washes away the adhering toner, but also that which has forced itself within the gelatine film.

86 KINDER.—I am at a loss to understand why it is impossible to obtain clear and intense lantern-slides with amidol, while everybody else speaks with so much enthusiasm of the substance. Look at the slides I send herewith, and tell me what is the matter with them.

86 *Answer.*—Helplessly over-exposed. Remember amidol requires an exposure but one-third of that necessary for hydrochinone, and a more liberal addition of bromide of potassium than for other developers is here desirable.

87 CLARA B. F.—Has a 6½ x 8½ St. Louis Camera and No. 3 Gundlach rapid rectilinear lens. She has attempted to copy with the apparatus cabinet card pictures in natural size, but can not do so. The largest picture possible is about two-thirds of the original. What am I to do? she asks.

87 *Answer.*—To make a reproduction of the natural size of the original, the bellows of the camera must be drawn out twice the focal length of the lens. The focus of your No. 3 lens is 12⅝ inches, the draw of the camera but 19 or 20. To make the reproduction in natural size, you require a draw of more than 25¼ inches, in order to be able to focus carefully. Apply to Scovill & Adams Co. for a cone or frustum to lengthen the focus of the camera.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

Fourteenth.—Because your advertisement will receive the best of treatment on the part of the compositor, and will be advantageously placed in its pages.

Fifteenth.—Because all its advertisers are endorsed by the publishers as being worthy of patronage.

Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

TRY DR. ANDRESEN'S AMIDOL DEVELOPER.

Business Notices.

FINE OFFER.—A complete double lantern and lecture outfit at half the cost to cash buyer. For particulars address J. H. B., Brooklyn Camera Co., 1197 Bedford Ave.

FOR SALE.—One Stendicke Universal Lens, fitted with Prosch Duplex Shutter, with pneumatic bulb and tube; eight-inch back focus. Cost $39, will sell for $25. Address "STENDICKE," care THE PHOTOGRAPHIC TIMES Office.

WANTED.—A copy of THE PHOTOGRAPHIC TIMES for March 17, 1893. Address CRANSTON & CO.,
158 Main St., Norwich, Conn.

A SELECTED PORTRAIT LENS, made by Dallmeyer, for sale. This lens has done some of the best known work in this country. It was a premium lens, originally costing over two hundred dollars. It can be seen at the warerooms of The Scovill & Adams Co. It goes to the highest bidder. Call for or address "PREMIUM LENS," 423 Broome St., New York City.

ANDRESEN'S PURE SULPHITE, for Amidol, Paramido-phenol, Rodinal, Eikonogen, or Pyro. Use only Andresen's *Pure* Sulphite of Soda. (See advertisement.)

"AMATEUR PHOTOGRAPHY," by W. I. Lincoln Adams, is "A Practical Guide for the Beginner." Illustrated. Paper covers, 50 cents; cloth bound, $1.

WANTED.—May 4, 1888, September 12, April 18, and July 4, 1890, PHOTOGRAPHIC TIMES. Will pay 15 cents per copy for them. COMPLETE FILE,
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$350 CASH will buy nicely arranged gallery on principal business street in Baltimore, Md., doing good business; fine light. Owner leaving city.

FOR SALE.—A first-class gallery situated on Main St., Buffalo, N. Y. It is now doing a paying business. For further particulars address DAVID TUCKER,
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THE PLATINOTYPE CO.,
1624 Chestnut St., Philadelphia.

PHOTOGRAPHIC BROKERAGE.—Established especially to furnish carefully selected outfits of any make or grade to those living at a distance. Address
C. M. BROCKWAY, 33 Worth St., New York.

BARGAINS.—Several fine outfits but little used; lenses, shutters, etc., at way below cost prices. Can be seen at J. F. Lloyd's, 845 Sixth Ave., or particulars by letter by addressing C. M. BROCKWAY, 33 Worth St.

FOR SALE.—The contents of a photograph gallery, complete; a 14 x 17 and 8 x 10 camera, with all appliances, Gundlach lenses and an extra wide-angle lens, also chemicals and instruments complete. Cheap to a cash buyer. Address RICHARD K. FOX, Franklin Sq., New York.

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FOR SALE.—A prominent and well furnished studio, centrally located on the main thoroughfare of Boston; must sell on account of sickness. Investigate this. Address G. W LEEDS, 503 Waghington St., Boston, Mass.

FOR SALE.—First-class new studio in the healthy, growing town of Charlottesville, Va.; 8,000 population; good prices, business, and record. University of Virginia near the studio; splendid opportunity for a young man; am not able to look after it.
D. H. NARAMORE, Alexandria, Va.

S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography; no other has attained to equally fine results.
THE SCOVILL & ADAMS CO.,
423 Broome Street, New York.

WANTED.—A second-hand No. 1 Morrison Wide-angle Lens of about 2¼ in. equivalent focus. Address BARKER & STARBIRD, 56 Bromfield St., Boston, Mass.

WANTED.—A copy of "The American Annual of Photography and Photographic Times Almanac" for 1889. Address W. F. DURNALL, No. 462 So. 24th Ave., Omaha, Neb.

PERFECTED BRADFISCH Aristotype Paper leads the world! It does not stick, nor does the surface of the print rub off.

PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never lose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
C. M. DARLING, 122 West 36th St.

USE WUESTNER'S New Eagle Ortho Plates. None better. Sold by
THE SCOVILL & ADAMS CO.

A STEREOSCOPIC HENRY CLAY CAMERA FOR SALE.—This camera has been thoroughly tested and is as as good as new. Address "STEREO.," care THE PHOTOGRAPHIC TIMES.

HELMOLD'S HARDENING MIXTURE is worthy a trial. Price $1 per bottle. Will treat 100 5 x 7 negatives or prints.

GRIT VARNISH.—The best retouching medium in the market; 6-ounce bottle, 40 cts.
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THE ELDORADO BENCH AND WALL COMBINATION makes eight different combinations, every one of which is effective and artistic. Just introduced by THE SCOVILL & ADAMS CO. Price reduced to $15.

WE HAVE JUST received another consignment of German Glass Baths. These are *perfect* goods, and admit of the dipper to the very bottom. We offer them at the following prices;

Size, 4 x 5	each,	$0.80
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WUESTNER'S IMPERIAL NON-HALATION PLATE IS THE LATEST.

FOR SALE.—Gallery in town of 15,000; net profit for past year $1,400. Address "R.," care B. French & Co., 319 Washington St., Boston.

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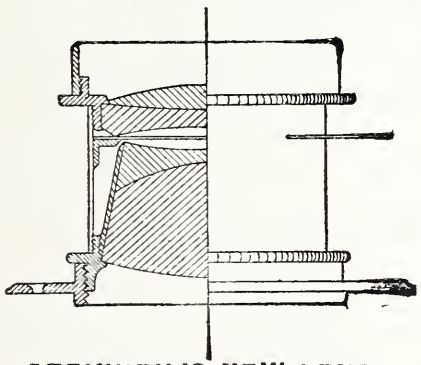
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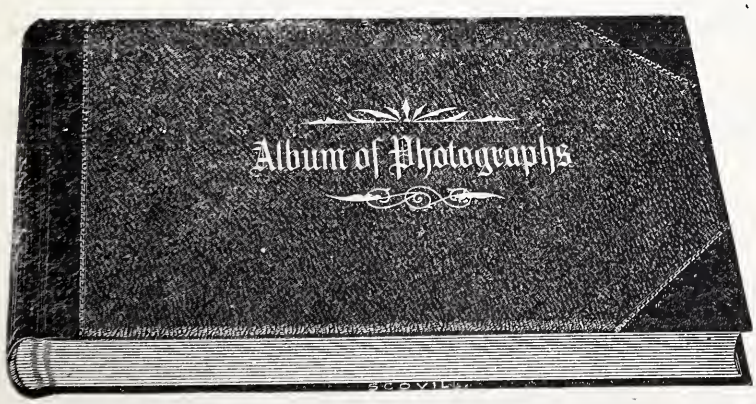
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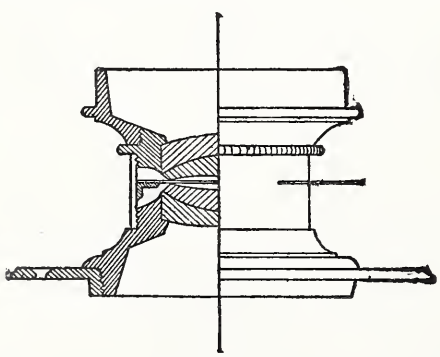
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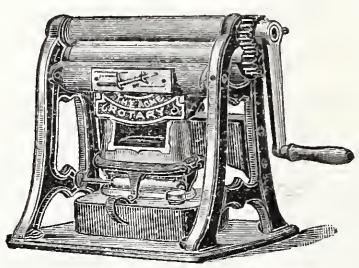
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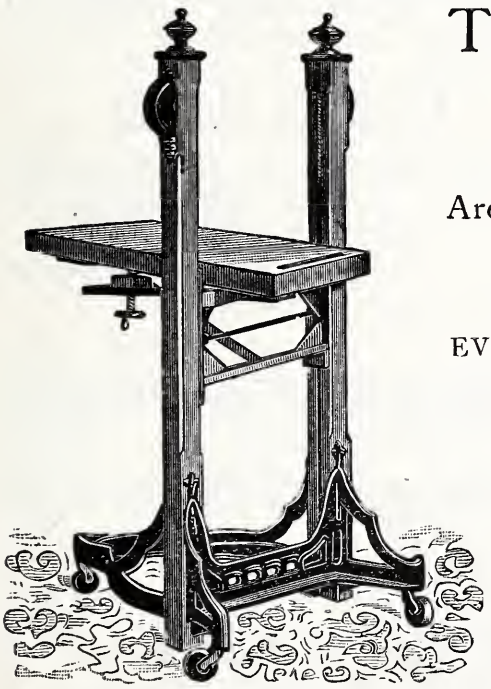
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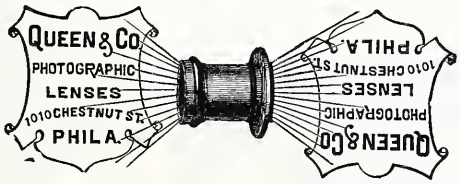
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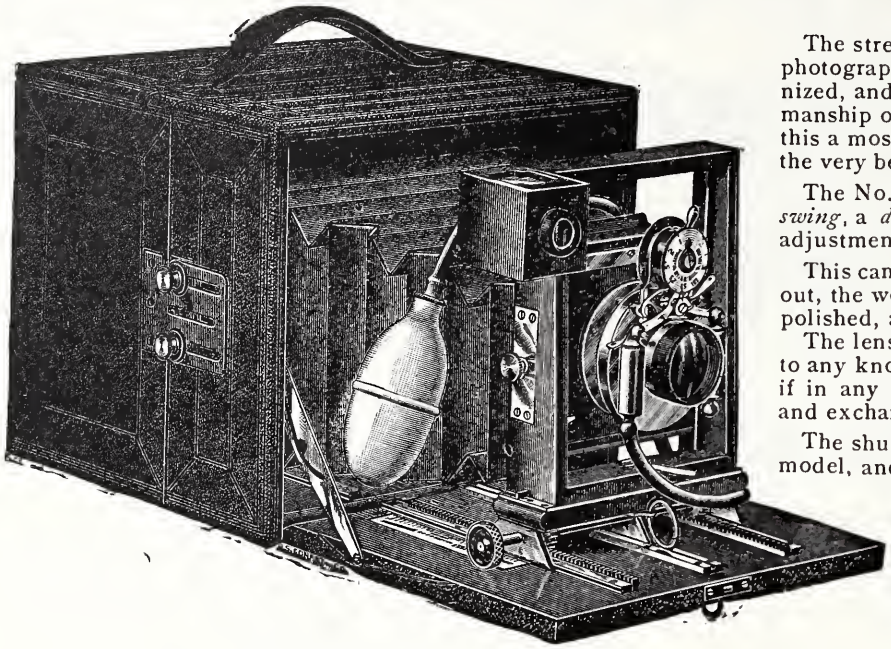
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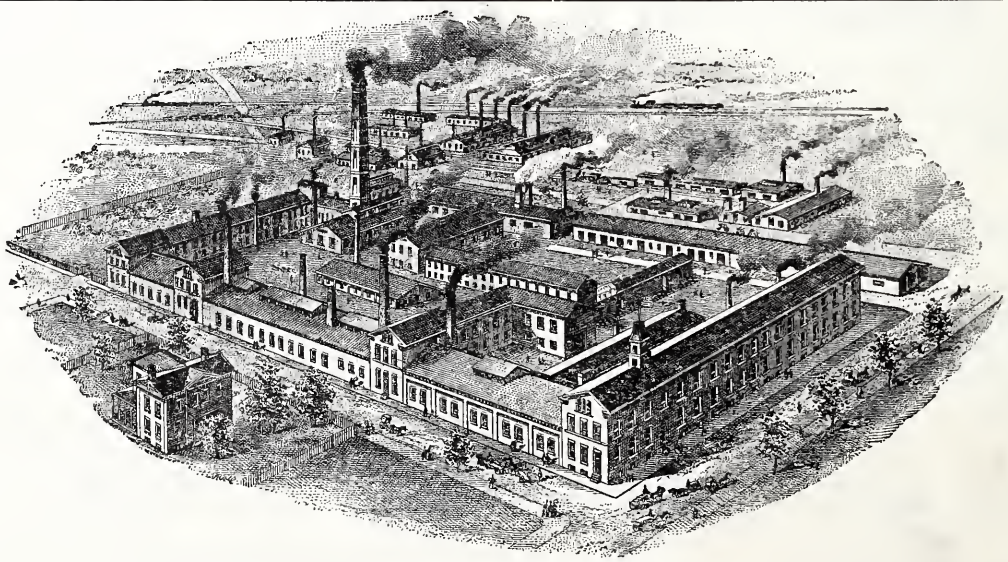
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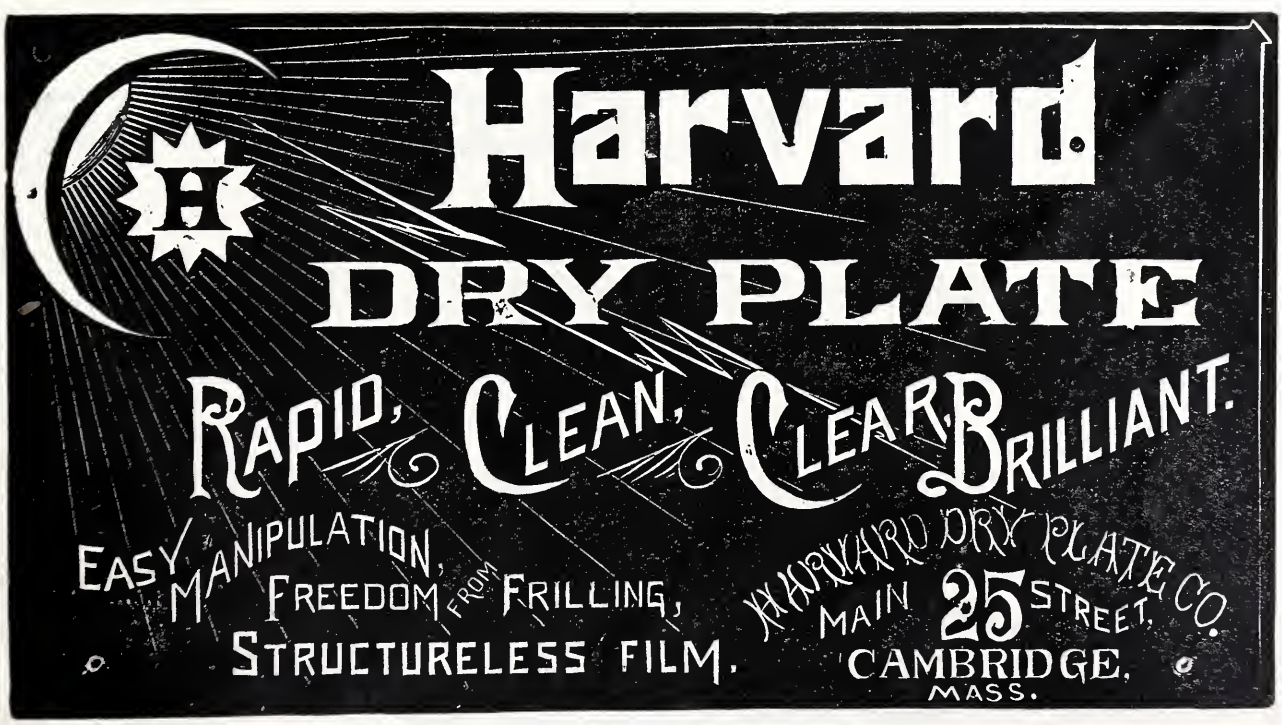
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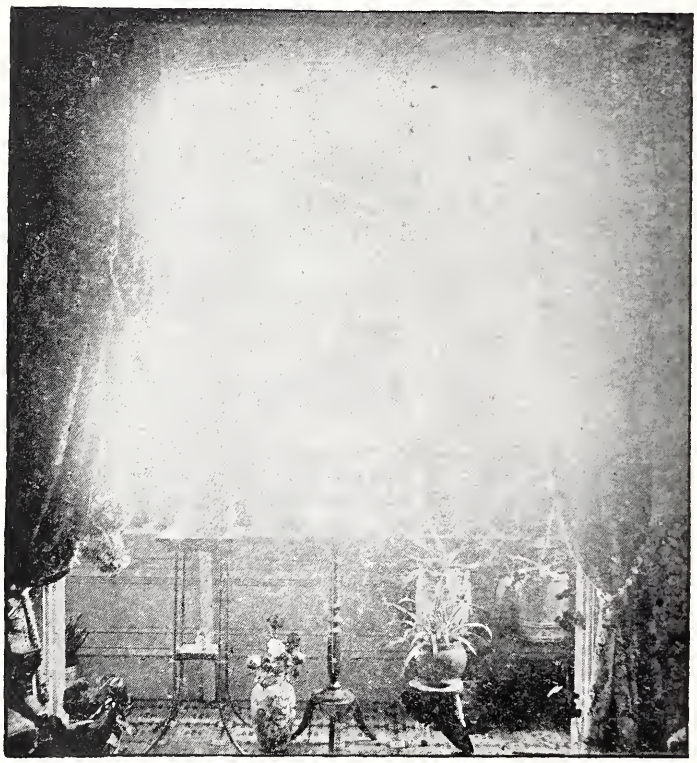
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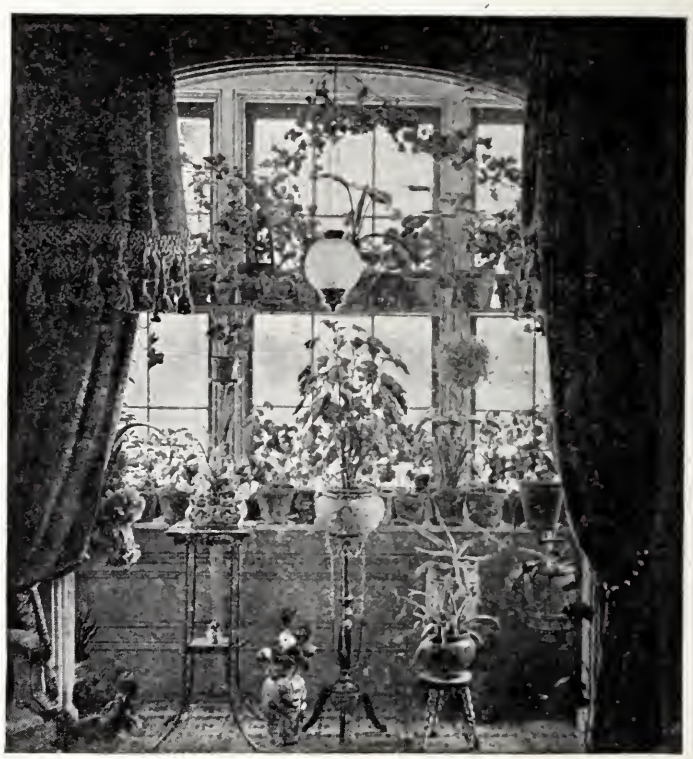
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